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HOSPITAL DESIGN IN USE

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Kirkcaldy

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Victoria Hospital
Kirkcaldy

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VICTORIA HOSPITAL KIRKCALDY

VICTORIA HOSPITAL, KIRKCALDY

I - GENERAL INTRODUCTION

1. The review carried out at the Victoria Hospital, Kirkcaldy is the second in a series of studies designed to provide information likely to be of value in the planning of other new hospital units. As with the previous study, it was undertaken with the full co-operation and assistance of the hospital staff.

2. It is appreciated that a wide variety of people are likely to refer to a "Design in use" report and that they seek information in various degrees of detail. Each chapter of this report contains an introductory section, a detailed description of the accommodation with comments, and, where appropriate, "points relevant to future planning". It is hoped that this format will prove acceptable to the general reader while at the same time providing detailed information for those having a specialised interest.

3. This report examines Phase 1 of a hospital, Phase 2 of which is now under construction. Attention has therefore been focused principally on the functioning of individual departments since a fair appraisal of the complete hospital in action can hardly be attempted until the 2nd phase is brought into use.

4. Some departments have been studied in more detail than others. Some were of particular interest from the planning point of view while, on the other hand, departments in temporary accommodation pending the completion of Phase 2, or in old buildings adapted to new uses, were of limited relevance to the main purpose of the study. For these reasons some departments have been treated comparatively briefly in this report.

5. Useful preliminary discussions were held with officers of the South-Eastern Regional Hospital Board, the Board of Management and senior members of the hospital staff before the review was commenced. The method of study was similar to that employed in the Department's first Design in Use Study which was on Vale-of-Leven Hospital. There were, however, three main differences:-

   (1) Following the first detailed ward study, certain recommendations with regard to equipment, the use of sterile packs and the keeping of nursing records were accepted and, when implemented, a second survey was undertaken.

   (2) Studies of nurses' journeys were made in ward units at night as well as by day.

   (3) A detailed study of traffic through the radiology department was undertaken.

6. The survey group from the Scottish Home and Health Department and the Scottish Development Department comprised:-

   A medical officer

   A nursing officer

   An architect

   An engineer

   An administrative officer

In addition, assistance in carrying out the studies of nurses' journeys was given by various members of the administrative, nursing, work study and architectural staff. The Scottish Development Department undertook the photography.

7. Acknowledgments are due to the Matron and hospital staff in all departments; the Group Medical Superintendent; the Hospital Secretary and the Regional Architect, South-Eastern Regional Hospital Board.

Background notes

8. The main subject of review was the first phase of the development of a district general hospital at Kirkcaldy. These new buildings provide accommodation for 123 beds with supporting services. Building was started in December 1955, and the new extension was officially opened in October 1960. The total cost of the scheme was about £750,000. The hospital site is convenient to the local population, but involved considerable difficulty during construction due to old underground workings. One ward was demolished and replaced during the period of the survey.

9. The total bed complement as at 1st September, 1962 was as follows:-

Ward 1	Medical	27 beds,	Staff 1 bed	28
Ward 2	Geriatric, Women	32 beds		32
Ward 3	Medical	31 beds (Men 17 beds, Women 14 beds)		31
Ward 4	Geriatric, Men	16 beds		16
Ward 5	Paediatric, Surgical 9 beds, Medical 20 beds			29
Ward 6	Surgical, Men 26 beds, E.N.T. Men 2 beds			28
Ward 7	4 E.N.T., 6 Eyes			10
Ward 8	Surgical, Women	28 beds		28
Ward 9	Gynaecological 14, E.N.T. Women and Children 12 beds			
		Unclassified 2 beds		28
			Total	230

10. Ward 2 is a new unit described separately at para. 71 below. Wards 5, 6, 7, 8 and 9 are included in the new block making the total of 123 beds referred to above. It may be noted that the ten beds in Ward 7 were originally intended for dermatology - a planning assumption not justified by subsequent events. When detailed studies were carried out in Ward 6 it was being used entirely for male surgical patients. The other wards are in pavilions to be used later for geriatrics and psychiatry.

11. The total number of in-patients discharged in the years ending 30th September 1962 and 1963 were respectively 4,884 and 5,236. The total number of out-patient attendances at consultative clinics for the same periods were 38,570 (including 9,775 new patients) and 40,660 (including 10,301 new patients). The average daily bed occupancy rates were 87% and 88% in these years, and on several occasions exceeded 90%.

12. The hospital caters for patients from a wide area. An indication of this is given in the list of patients discharged from the hospital during 1961 (Appendix A).

13. There is a pre-convalescent unit of 28 beds (the Hunter Hospital) in Kirkcaldy, and its use makes the work load in the new surgical wards of the Kirkcaldy Victoria Hospital unusually acute in character. This point is considered in greater detail later in the report (paras. 47-49).

14. The hospital employs about 50 categories of staff and in August 1962 the total was 331 persons on a full-time and 163 on a part-time basis. Of this number the Matron, Assistant Matron, Domestic Supervisor, 8 doctors and 79 nursing staff were resident. A detailed list of the categories of staff is given at Appendix B.

15. The hospital is closely linked with other units in the group. Student nurses are seconded to the Cameron Hospital and to the Orthopaedic Hospital for part of their training. The hospital acts as a reception and clearing centre for a considerable range of hospital stores, and the pharmacy meets the requirements of some 700 beds in 11 different units. The group catering officer, based at the Victoria Hospital, undertakes work of a supervisory character at other hospitals in the area. Sterilising facilities are provided at the C.S.S.D. for drums packed at other units where autoclaving facilities are unsuitable.

16. Since the hospital laundry was closed, foul linen has been sent to Stratheden Hospital and all other articles to a commercial laundry. Accident cases are referred to the Kirkcaldy Orthopaedic Hospital. Laboratory services are provided from the group laboratory at the Cameron Hospital. It may be noted that under the chairmanship of the group bacteriologist and including the sisters from surgical wards, a hygiene committee advises on keeping infection records at wards. The area blood transfusion service is operated from this hospital.

17. While visitors are admitted to see seriously ill patients as desired, routine visiting hours are:-

Monday	7 - 7.30 p.m.
Wednesday	5 - 6 p.m.
Thursday	7 - 7.30 p.m.
Friday	7 - 7.30 p.m.
Saturday	2.30 - 3.30 p.m.
Sunday	2.30 - 3.30 p.m.

Paediatric Ward 2 - 6 p.m. daily subject to the approval of the ward sister.

General description of the hospital buildings - (See plans at appendix O)

1. General view of the hospital

18. The first stage of the new hospital is on the northern outskirts of Kirkcaldy. The main block is a T-shaped three-storey building with a single storey out-patient department projecting to the north, and a single storey X-ray department at the west end. It is a steel framed building with in situ reinforced concrete floors. External walls are partly of cavity construction - using a facing brick which is also featured internally in certain places such as the entrance hall- and partly of a form of curtain wall. Internal partitions are brick. Roofs are flat with a chip finish on three-ply felt, except for a portion of the roof which is asbestos tiled. Windows are either horizontally centre pivoted or side hung.

19. The nurses' home is a six-storey building standing on pilotis to the north of the out-patient department. The construction of this block was of considerable technical interest. The repetitive plan from 1st floor upwards permitted the use of a moving shutter and continuous pouring of the reinforced concrete walls; from 1st floor to roof level, this was completed inside four days.

2. View of the nurses' home and out-patient department

20. The kitchen and dining room block is a single-storey brick building to the west of the main hospital group, and, further west again, are the small mortuary block and the boiler house. In addition there is on the site a number of single storey wards built early in the century. One of these was demolished to make way for Phase 2 of the hospital during the course of the study, and has been replaced by a new single-storey geriatric assessment unit. Phase 2, which will lie to the south-west of the first part of the hospital and will be connected to it at the present X-ray department, will consist of an eleven-storey tower block above a two-storey podium. In addition, a laboratory block is being built immediately to the north-east of Phase 1.

21. The following departments are housed in the main building (Phase 1):-

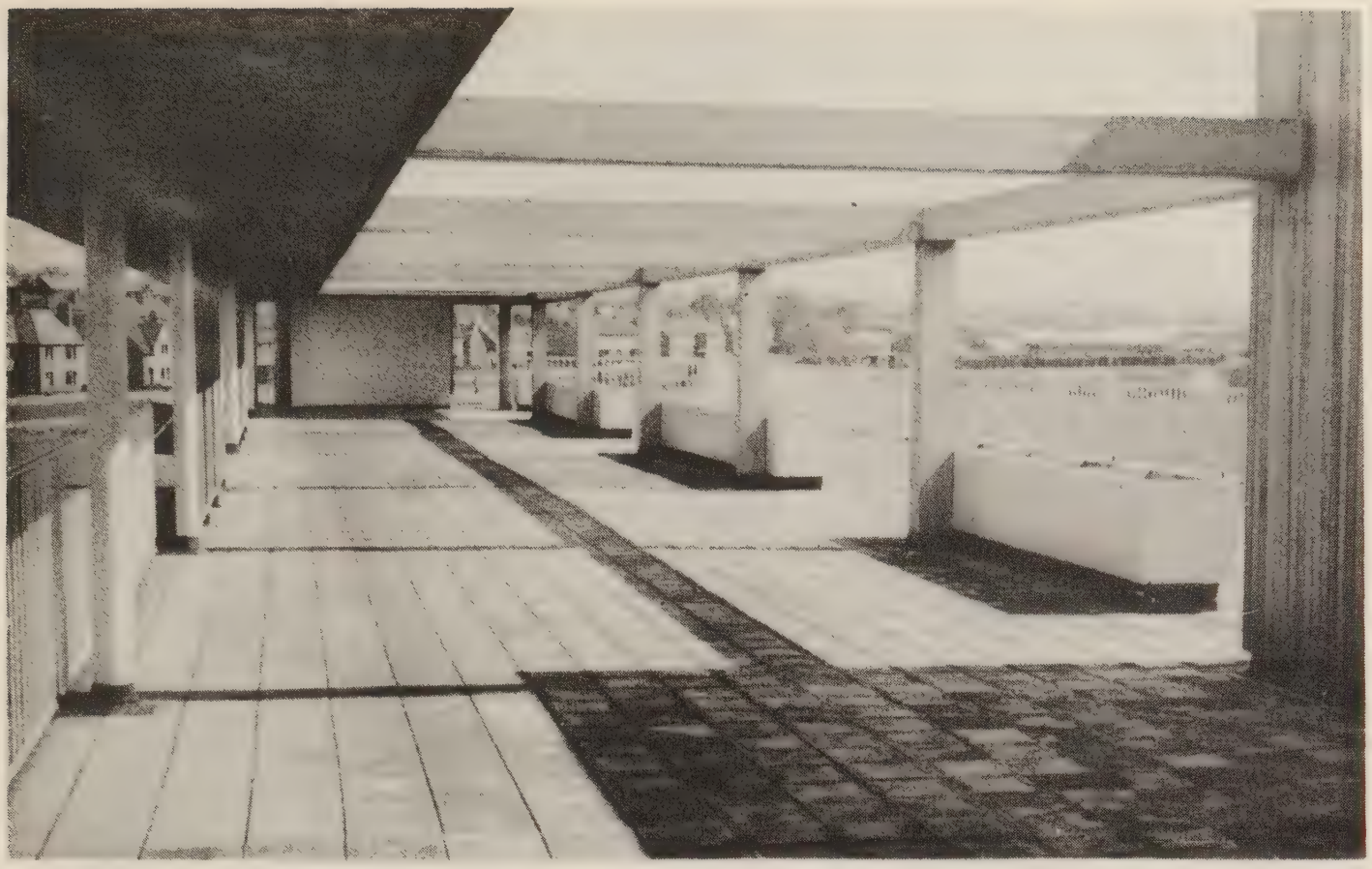
(1) In the east wing, the C.S.S.D., pharmacy and administrative offices on the ground floor together with the entrance hall, with wards on the two floors above. There are shelter screens and a pergola on the roof.

(2) The south wing contains the paediatric ward on the ground floor with two other wards on the first and second floors.

(3) The west wing contains physiotherapy and part of the X-ray department on the ground floor together with part of the records department; the doctors' residency is on the first floor, and the theatre suite on the second.

(4) The single-storey out-patient department projects north from the main building and has its own entrance and reception facilities. It flanks the main entrance courtyard and car park.

22. Vertical circulation consists of a free standing main staircase in the entrance hall rising three floors (with a smaller staircase up to the roof), and two bed-lifts on opposite sides of the entrance hall. There is in addition a staircase at the far end of each of the three-storey wings. These three staircases and the lifts also serve the basement, but the main staircase stops at the ground floor. There is in addition a small electric hoist for cassettes between the endoscopy theatre and the X-ray department, and there are chutes to take dirty linen from the wards to the basement. The basement is entirely a storage and service area.



3. Shelter screens and pergola on roof

23. Entrances:-

(1) From the forecourt, the main entrance leads to the hall. To the east of this there is the ambulance entrance under a canopy.

4. Main and ambulance entrances

(2) At the east end of the building there is a small entrance which was intended for the dermatology out-patient department.

(3) On the west side of the forecourt is a separate entrance to the out-patient department.

5. Pharmacy stores delivery entrance

(4) On the south side of the building there is a stores delivery entrance near the pharmacy department.

(5) There is another entrance at the west end leading to the X-ray department. This was intended for patients coming to the chest clinic, but is now largely used by nurses en route to the dining room.

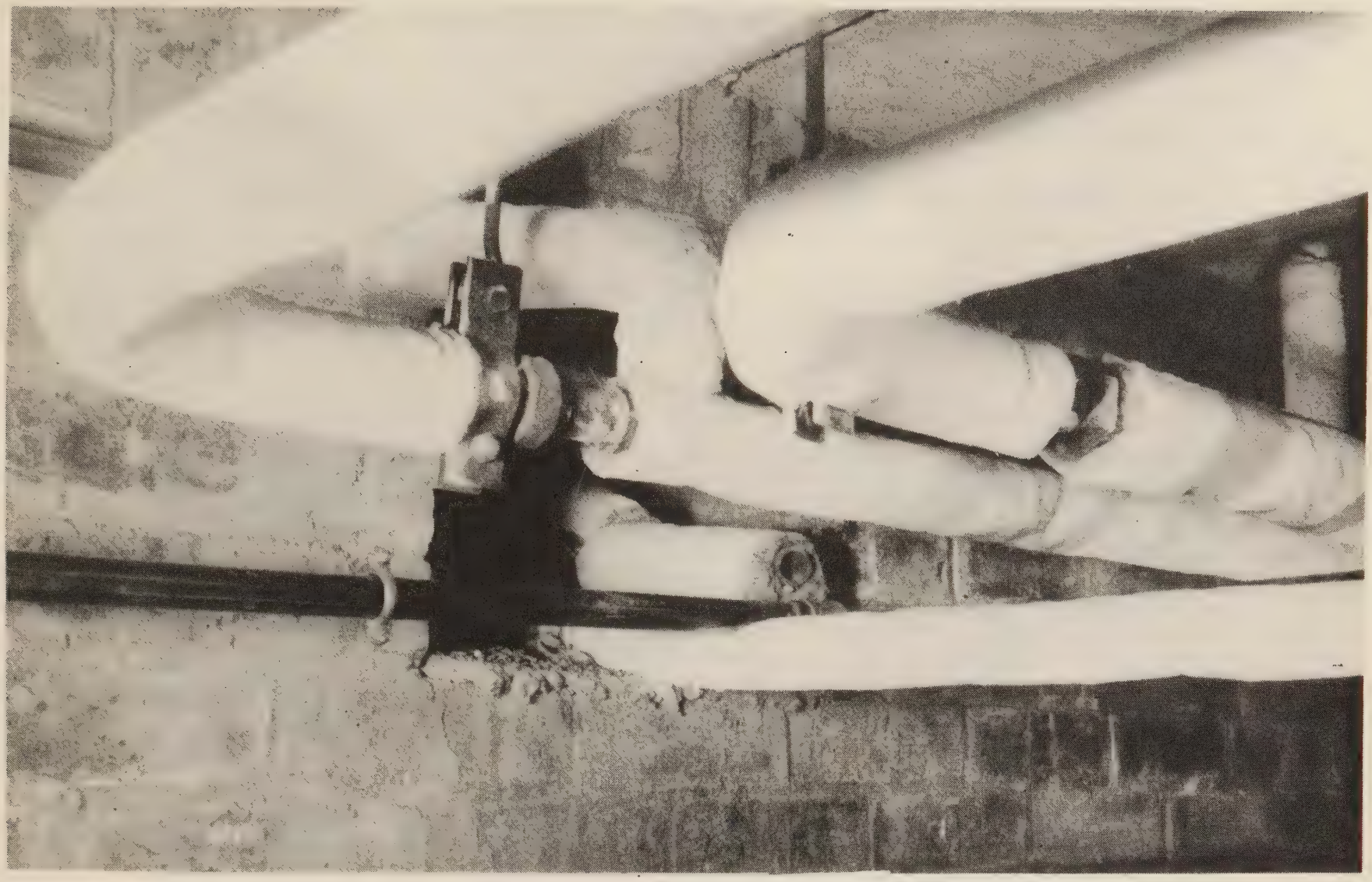
(6) The main stores entrance in the basement is approached down a ramp at the west end of the building. (See photo. 58)

(7) An escape door at the north end of the out-patient department and similar doors at each end of the paediatric ward complete the outside doors to the main building.

24. The roof has been designed for use as outdoor sitting space, and has been provided with railings set well in from the edge of the building so that there is no sense of danger. There is a covered way leading from the staircase to an area under a roof provided with shelter screens. This roof space creates a pleasant impression and the view is varied if not outstanding. Vent pipes etc. have been effectively hidden in the casing of flower boxes. Additional screens at right angles to the axis of the block might have made the terrace more sheltered and attractive as a sitting space. The roof area has seldom been used.

Engineering services: general description

25. The boiler house contains three 12,500 lbs./hour economic boilers designed to serve the complete hospital development, the larger part being the 14-storey Phase 2 block scheduled for completion in 1966. Steam is distributed to local plant chambers in the main hospital block, nurses' home, kitchen and dining hall and the geriatric assessment unit as well as to older parts of the hospital. The steam distribution services are accommodated in a 5 ft. wide shallow duct, the covers of which also provide suitable footpaths between certain buildings. Heating is generally by low pressure hot water hospital pattern radiators recessed under window sills. There are a few steam convectors in the X-ray and out-patient departments. An embedded coil system provides background heating in the theatres which are mechanically ventilated but which are without mechanical cooling. The geriatric unit, completed in 1962, has a plenum heating system with some convectors.



6. Detail of connection of vertical risers from main distribution services in the basement corridor

26. In many instances, connections from the main distribution services in the lower ground floor corridor to the vertical risers are quite useless for adequate and proper maintenance. Faults developing in those areas present major difficulties and can mean a lengthy delay in restoring a service. In one instance, it would have been necessary to take up floors to gain access, but the solution adopted was to abandon the section of pipework and re-route on the outside of the building round the fault. The seriousness of this lack of detailed planning is illustrated by the fact that the lower ground floor corridor has been flooded more than once as the result of service defects.

27. The central calorifier chamber serving the heating and other services is well sized and located, but planning details and selection of plant are open to criticism. Each of the three vertical heating calorifiers (weighing several hundredweights) requires to be manhandled without mechanical lifting aids from the plinth and laid in the free floor space in the room before the heating batteries can be withdrawn for regular statutory inspection. The plant chamber is of adequate size to accommodate horizontal calorifiers and the layout could have been better arranged had sufficient thought been given to maintenance services.

28. There are two separate electricity supplies to the hospital. The main distribution within the hospital is contained in a 6" x 3" triple section trunking in the lower ground floor serving a number of risers ultimately connected to 7" x 2" floor trunking in the main ward corridors. Incandescent lighting is employed throughout. Bedside services include a bed head light, nurse call system, radio and power sockets, piped oxygen and suction points to a proportion of beds and a portable G.P.O. telephone service. Fire alarm points and clocks operating on an impulse system are provided at suitable positions. There is also an induction loop staff location system.

29. Detailed points regarding the engineering services are made departmentally in the various sections of this report, but it may be of interest to note the following conclusions relating to the mechanical services installation as a whole -

(1) Close collaboration between the architect and the engineer on the question of ventilation, duct space and window design is essential at an early stage in planning.

(2) Suitable levels for heating in the various areas of the hospital should be agreed so that the hospital engineer is fully briefed on the desired comfort conditions.

(3) A full set of instructions for operating the mechanical services should be provided when the hospital is commissioned and be on charge to the engineer's department.

(4) A clearly understood and effective channel of communications should be available so that all complaints and comments on environmental conditions can be considered and appropriate action taken.

(5) Where there are a number of mixed services in vertical ducts, the design consultants should co-ordinate and arrange the space requirements, and, where necessary, produce installation drawings for the respective trades.

(6) Experience in this project has emphasised the need for detailed consideration of the heating in the transitional periods of a phased development; this should be reflected in the instructions given to the consulting engineers.

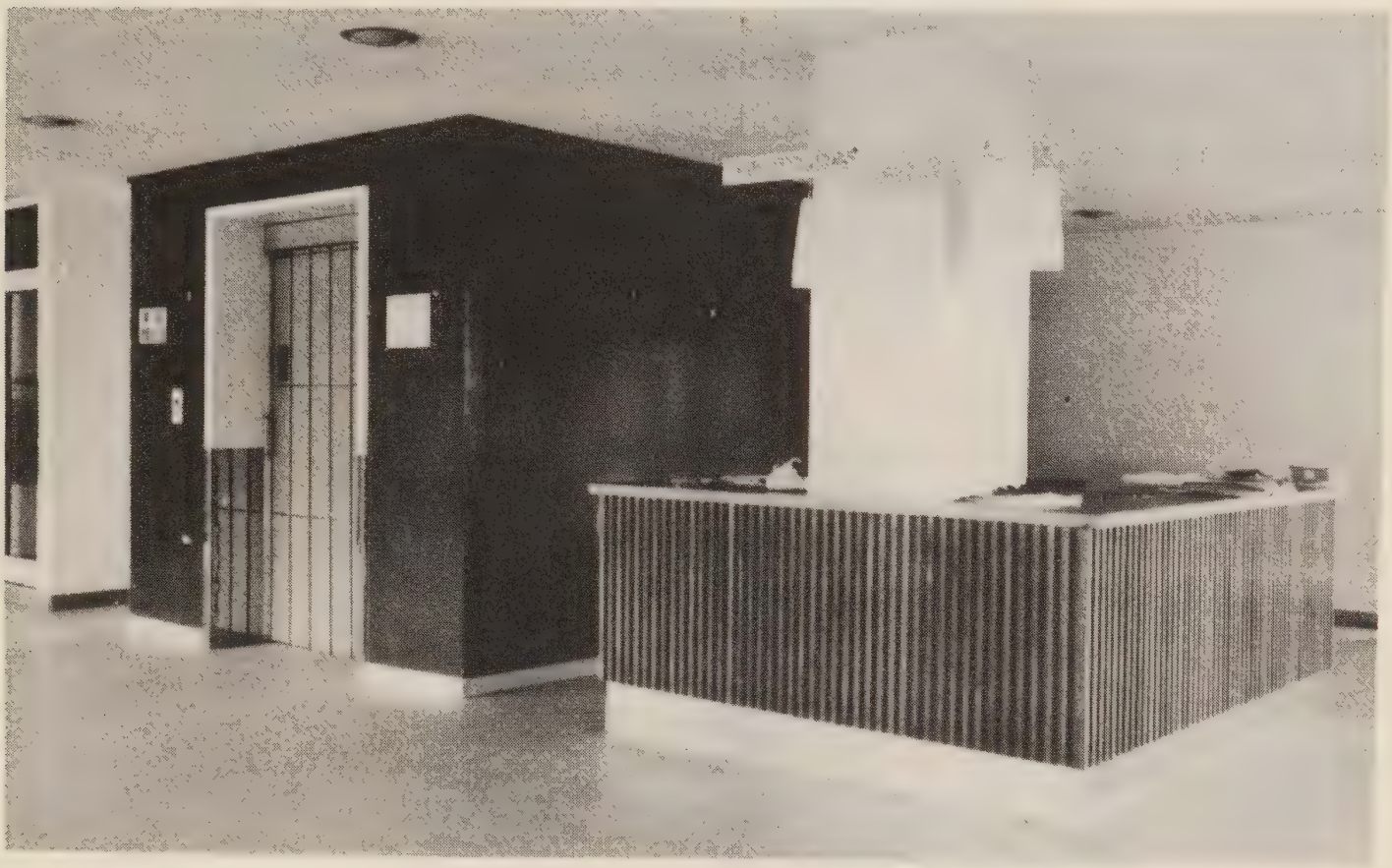
II - ENTRANCES

Entrance hall

7. Entrance hall

30. The entrance hall gives an impression of spaciousness. It is light, airy and sunny and has bays which are used as waiting spaces. The attempt to obtain an imaginative and informal layout was appreciated and regarded architecturally as entirely successful. While most observers gained a favourable impression on entering the hospital, opinion was divided on the acceptability of the waiting bays. To some they represented a marked and successful advance over more traditional arrangements; to others their value was reduced by being exposed to a main traffic route and in being overlooked from the main stairway.

31. An attractive floral display is maintained throughout the year in free-standing and built-in flower boxes.



8. Enquiry desk

32. The enquiry desk is in a commanding position opposite the main door. It is manned from 8 a.m. to 5 p.m. (8 a.m. to 12 noon on Saturdays), and during visiting hours only on Sundays. There is an internal telephone at this desk, and experience has shown that an external telephone would be useful and would enable many inquiries to be dealt with immediately.

33. The public telephone booth was difficult to find being round a corner from the most frequently used waiting spaces, but was moved to a more suitable position in the course of enclosing part of the hall to form an extra office. Visitors' lavatories off the waiting area in the entrance hall suffer from poor natural ventilation.

34. Many out-patients come to the main entrance hall in spite of a direction sign, although all should go to the appointment and reception points in the out-patient areas. Many stores are delivered to the entrance hall instead of the stores delivery entrances. This is because the front entrance is more convenient, being near the lifts, and because the lorries cannot negotiate the right angled ramp to the main stores entrance. Economy and efficiency would result if, in a small building, it were possible for the porter to control both the main entrance and a separate stores entrance.

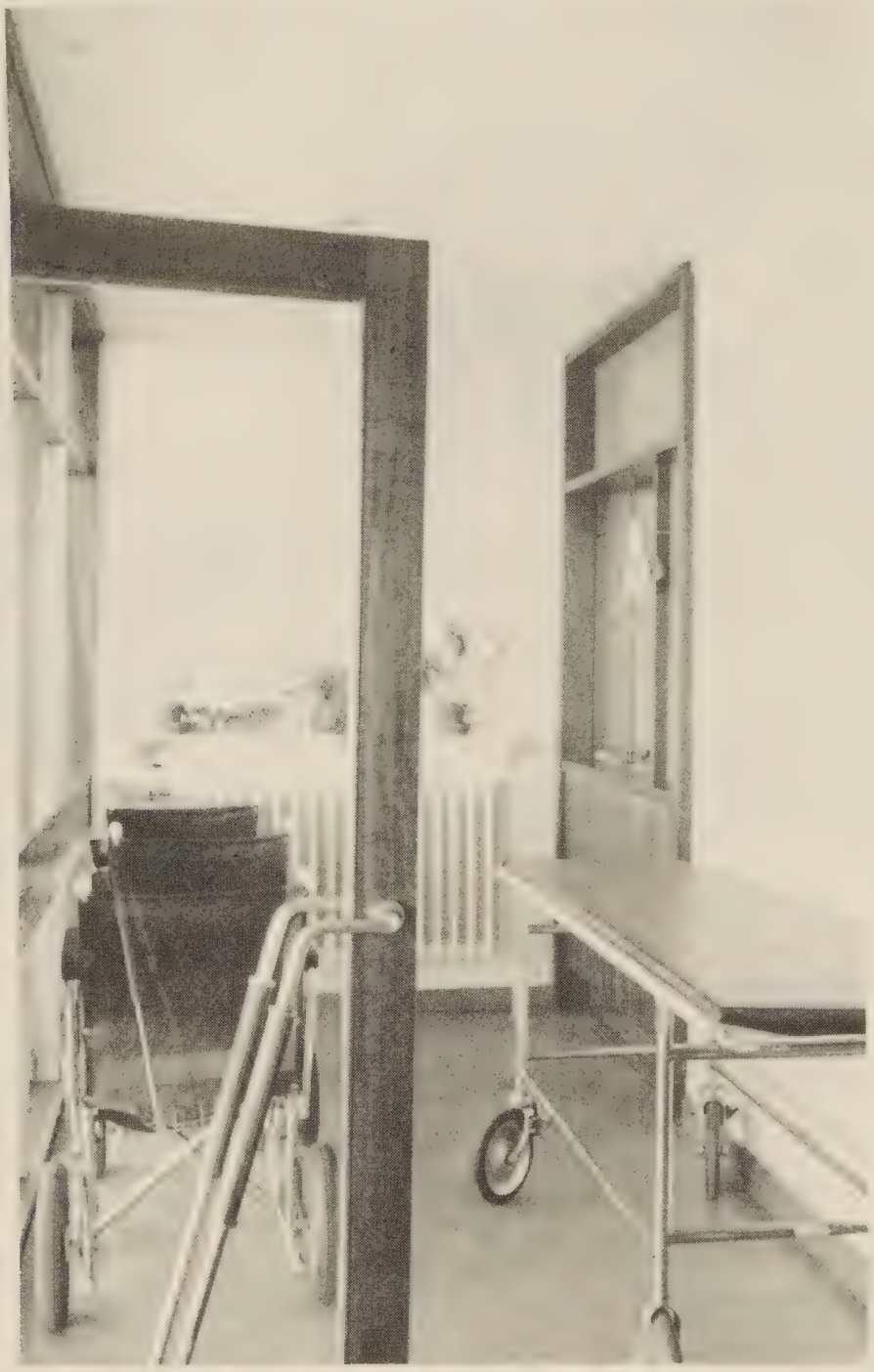
35. Steps and mats cause difficulties for wheel chairs and trolleys at the main entrance and the out-patient entrance.

36. There are two single-speed 50 ft./minute bed/passenger lifts not in adjacent lift wells but positioned diagonally across the hall approximately 30 ft. from each other. The one furthest from the ambulance entrance is reserved for operating theatre traffic.

37. The average illumination value in the entrance hall varies between 4 and 6 lumens/square foot at floor level, with values of up to 8 lumens around the waiting area. The feature of the entrance hall lighting – an 8-light pendant in the 30 ft. stair well - is decorative, but presents its own problem for shade cleaning, relamping and general maintenance.

Ambulance entrance

38. The use of the ambulance entrance is restricted by the fact that some ambulances cannot pass beneath the canopy. The head porter's office is next to this entrance. It is too secluded for effective use, being remote from the main entrance, and the porter bases himself at the main enquiry desk.



9. Ambulance entrance

Telephone exchange

39. The exchange was sited immediately next to the main door to suit the incoming cable. This also permitted the operator to observe staff movements, but, in fact, the operator is too busy to do this and in any case the staff location system should make it unnecessary. The operator's job is complicated by frequent interruptions, and the exchange would be better sited in a reasonably private position. Further distraction is caused by inappropriate equipment in the switch-board room - notably the master clock and the master radio. The room of 12'0" by 6'8" is cramped and badly ventilated. The exchange consists of external and internal boards. The PMBX external board has 80 lines. The load of work is heavy at times. The G.P.O. recommend frequent short breaks for busy operators, and this should be borne in mind during planning together with the fact that many operators, being disabled, require easy access to lavatory accommodation.

10. Telephone exchange

Points relevant to future planning

40. (1) Too many entrances complicate the running of the hospital, and the functional value of each separate entrance should be carefully assessed at an early stage in the design.

(2) The design of the entrance and suitable waiting facilities for use by visitors hinges upon a clear briefing. The more visiting hours are restricted, the greater provision must be made for the associated peak loads of visitors.

(3) The scale of provision of lifts and staircases for the use of patients and visitors and for the delivery of supplies is affected by considerations referred to in sub-paragraphs (1) and (2) above.

(4) Notices alone may fail to direct large numbers of people to the appropriate entrance if there is an inviting and more convenient alternative: this can be materially assisted if the design of the buildings and approaches inflects people in the right direction.

(5) There is a need to provide covered space at stores entrances for the temporary storage of empty cartons and containers awaiting removal.

III - WARD UNITS

Introduction

41. The older wards 1, 3 and 4 will not be described in detail. These separate, single-storeyed brick buildings have served a useful purpose but are not relevant to the immediate study. They were not designed to include the range of facilities normally required for acutely ill patients and are generally inconvenient to run.

42. The new wards 6, 8 and 9 are similar in design. Ward 6, a men's surgical ward, was studied in detail and the layout of this 28-bed unit is given at Appendix C. The survey group were particularly appreciative of the assistance given by the ward sister throughout this study. The 10-bed ward, originally intended for dermatology, is now in general use. The paediatric ward, which differs in some respects from the standard wards, is described at para. 69. The new geriatric ward unit (Ward 2) is a separate building and is described at para. 71.

Staffing

43. The number of nursing staff required to run the new wards is relatively high, and, while an assessment of nurse staffing ratios was not the primary purpose of the review, it became clear in early discussions with the Regional Hospital Board, the Matron, the Medical Superintendent and the Secretary, that this was a cause of concern. At the time of the first survey of nurses' journeys in Ward 6, for example, the total nurse staff complement was sister and nine nurses of various grades to cover the period 7.30 a.m. to 8 p.m. In view of this, it appeared that, while not undertaking an exhaustive analysis, some differentiation should be attempted during the course of the main study of the extent to which this level of staffing was required by the work load, i.e., the type of patient being treated, the general organisation and facilities available, and how far it was influenced by the layout and general design of the new wards.

44. It may be noted in this general connection that the nursing staff worked a 44-hour week and a split shift system of duty. A considerable number of nurses were non-resident and married (70 at the time of the survey) and liable to unpredictable periods of off-duty for domestic reasons. There is in any hospital a proportion of nurses who are not available for duty either in the wards or the departments by reason of study blocks, sickness, holidays or secondment to other hospitals in the area. This factor was not studied, but the opinion was expressed at Kirkcaldy that it represented a higher proportion than in most hospitals. On one day, for example, a total of 70 nurses shown on the total nursing strength of the hospital were not available for allocation to wards or departments. Again, the overall number of nursing staff was influenced to some extent by the increased intake of student nurses with a view to building up additional staff for the Phase 2 extension.

45. The lists of nurse staffing in Ward 6 were discussed with the Matron and Ward Sister, and examples of staff on duty on various dates are given at Appendix D. Too much should not be read into the total figures as they do not indicate the various grades of staff involved. While the main factors affecting nursing work in the wards are discussed separately below, it must be recognised that they are in fact closely inter-related.

Work load

46. As mentioned above, the average daily bed occupancy of the hospital as a whole has not fallen below 80 per cent, and on several occasions was above 90 per cent. The equivalent figure for Ward 6 is considerably higher than the average for the hospital. In April 1962, while the average occupancy for the hospital was 90.9 per cent, the figure for Ward 6 was 96.3 per cent. An indication of the increasing load is that, for the hospital as a whole, the average duration of stay fell from 23 days in 1961 to 15 days in 1962. The average duration of stay for patients in general surgery and E.N.T. was 12 days and for gynaecology 8 days. The average turnover interval was one day.

47. At each of several visits to Ward 6, it was noted that a high proportion of the patients required either intensive nursing care - in so far as the need for frequent, skilled, nursing attention was concerned - or that they represented "heavy" nursing due to their age or incapacity. At the time of the first study of nursing journeys, the average age of the patients, including two boys of 13, was 56 years. Two of the patients were 85 years of age, one 82 and six between the ages of 70 and 80. There were 26 patients in the ward on this particular day, and six of these were assessed clinically as requiring intensive nursing care. Illustrative details of the case load at a census in Ward 6 (men's surgical) and in Ward 8 (women's surgical) were taken on another occasion and are given at Appendix E.

48. The patients in Ward 6 could be divided into two broad categories. One group remained in the ward for only one or two days after operation and were then transferred to the pre-convalescent unit. In a period of nine months, 230 of 490 patients discharged from this ward were sent to the Hunter Hospital in this way. It is illustrative of the pressure on beds in Ward 6 that patients after repair of a hernia or removal of an appendix may go to the convalescent unit in 24 to 48 hours. Patients having had a gastro-enterostomy or a cholecystectomy may be transferred on their fourth or fifth post-operative day.

49. A second group of patients remain in hospital for much longer periods, and these are, with few exceptions, patients who represent a heavy nursing load. They are those who, for one reason or another, may be severely incapacitated or whose illness may be of a chronic or complicated nature. Few patients

are retained in the ward who have reached a stage of their illness when they require little nursing attention, and no patients of the type who in many wards in the past might even have assisted in routine work.

50. It may be noted that between 50 and 60 per cent of the admissions to the hospital as a whole were of an urgent nature. In a hospital which is not an accident and emergency centre, this is a significant figure, and, on many visits to Ward 6, it was obvious that the proportion of patients suffering from malignant disease was high. It should also be noted that there was no possibility of having a rota of receiving wards, and that Ward 6 was available to receive new cases at any time during every day or night. In short, the survey group was satisfied that Ward 6 represented a very busy unit, presenting a load of nursing work which was heavier than the average for most surgical wards.

51. The waiting list for admission to Ward 6 was in the region of 150 patients at the time of the study.

For the hospital as a whole, the waiting list was 1,062 on 30th September, 1962, and 1,118 at the same time a year before. The details are:-

Table 1

	Men		Women		Children		Total	
	1961	1962	1961	1962	1961	1962	1961	1962
Medicine	1	5	21	16	-	-	22	21
Surgery	108	73	149	175	29	11	286	259
Gynaecology	-	-	56	45	-	-	56	45
E.N.T.	136	189	90	112	453	374	679	675
Ophthalmology	-	2	-	3	20	14	20	19
Chronic sick	9	12	46	31	-	-	55	43
						Totals	1,118	1,062

General Organisation

52. It had been assumed during planning that the new wards would be served by two nursing teams each based at a nurses' station, and that both men and women might be nursed within one ward unit. These assumptions have not been realised. The staff of the ward comprises a sister with a varying number of staff nurses, student nurses, auxiliary nurses and ward orderlies. The following points may be noted:-

(1) *Sterilising*

At the beginning of the survey a very considerable amount of time was spent by nursing staff in finding and preparing items for sterilising at ward level.

(2) *Trolleys*

No adequate treatment trolleys were available. The equipment supplied had been designed with specific requirements in mind, such as the use of dressings drums, and the transport of water for bed bathing. With the introduction of sterile packs, wash hand basins in bed areas etc., these trolleys had become obsolete and some of them were being used for storage purposes.

(3) *Equipment*

There was a shortage of certain essential equipment, e.g. instruments, jugs, bowls, sphygmomanometers.

(4) *Nursing records*

When the study began, these were maintained in a series of notebooks and were capable of simplification. An exposed edge card system was successfully introduced.

(5) *Rotation of staff*

The rapid rotation of student nurses reduced their effectiveness in particular ward situations, and, as the present training school had been in operation for less than a year, there were relatively few senior student nurses.

(6) *Communications*

Nurse to nurse communications are important in a ward situation. During a 24-hour survey some 200 communications between nurses were recorded. It was noticeable that the enclosed bed areas impeded this form of communication.

(7) *Disposal*

At the beginning of the survey there was a lack of paper bags and other suitable containers for the disposal of used materials.

(8) *Telephone calls*

There was a considerable number of incoming calls. During the 24-hour survey 42 such calls were recorded.

(9) *Messages and journeys*

Much time was spent by nurses leaving this ward to go to other sections of the hospital. In this way, for example, during a period of six hours, four visits were paid to the X-ray department, three to the pharmacy, two to the central sterile supply department and two to the stores.

(10) *Service of meals*

The method of serving meals was time-consuming. The food trolley was retained in the ward kitchen and meals served from it.

53. In the course of the study, sterilising at the ward was stopped, a better range of equipment obtained, new trolleys provided, nursing records simplified and the service of meals altered. It was accepted by the staff that this re-organisation greatly facilitated the work of the ward.

Ward design

54. Ward 6, in which detailed studies were concentrated, has 28 beds with 4 single-bed rooms, 4 rooms each with 4 beds, and one area of 8 beds (see Appendix C). The grouping of 4 beds in one area gave an acceptable increase over open wards in the level of privacy for patients and their visitors. This arrangement rendered visiting easier at other than fixed visiting times. The use of the single rooms did not follow any particular pattern, and, if a bed was empty, it was likely to be in one of these rooms. The provision of 4 single rooms in a ward of 28 beds appeared to be sufficient; no suggestion was made that additional single rooms were required.

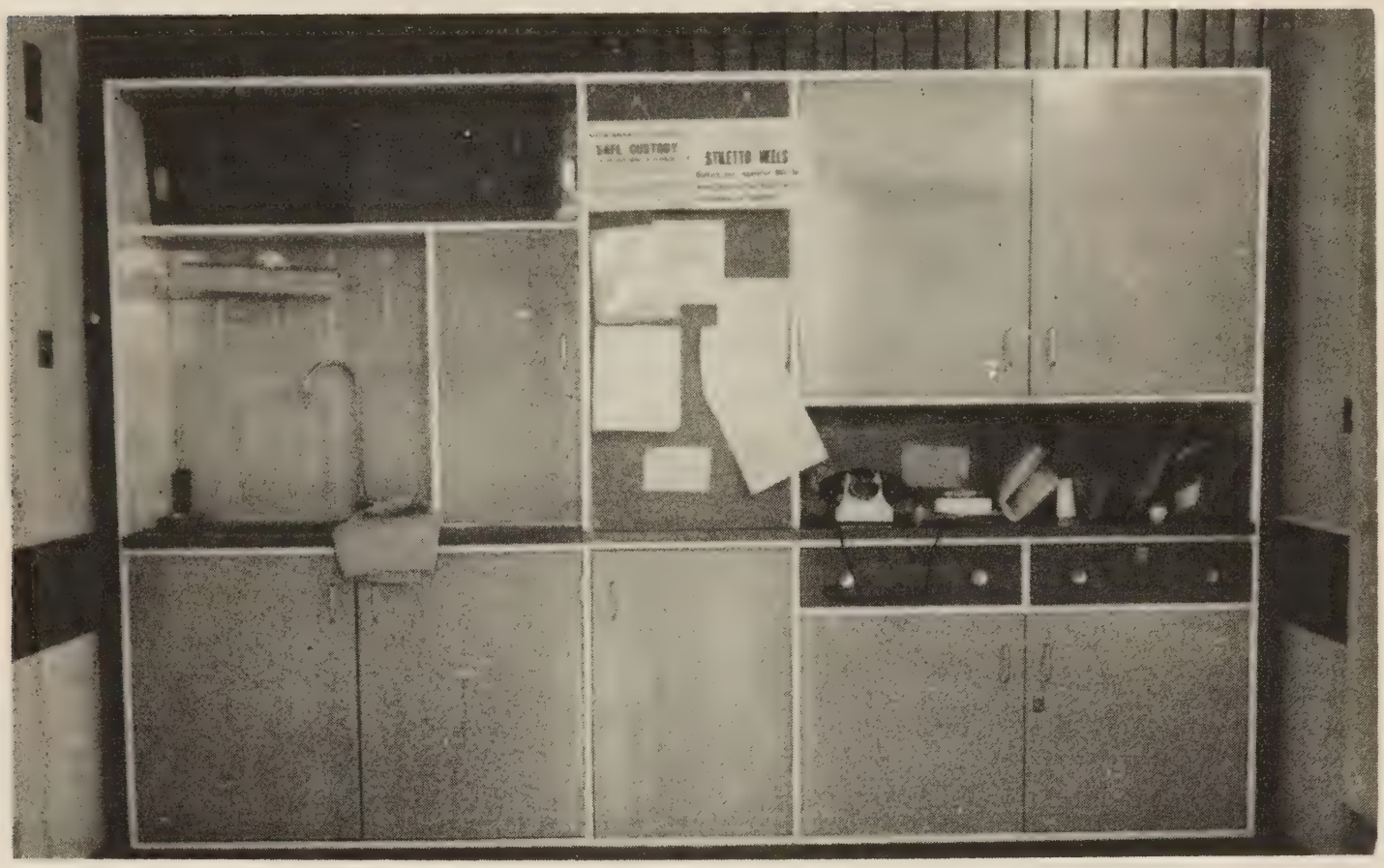
55. The entrance to this ward, which is on the first floor, is from a spacious landing through two sets of glass doors set some 16 ft. apart, leading to a long central corridor with doors on either side. The following is a description of each room or area with comments:-

Description	*Comments*
(1) Ward corridor	
Size 7'6" wide: 8'7" high 50 yards long Acoustic ceiling – continued into day space	Width marginal in association with relatively narrow doors. In spite of the ceiling treatment, sounds are clearly audible from one end of the ward to the other at night. At the same time, ceilings elsewhere in the hospital without acoustic tiles are noticeably less effective as regards the suppression of noise.
Lino tiled floor.	Condition remains good.
Rubber protective strip on walls 10" broad and top 3'0" above floor level.	Effectiveness reduced by variety in height of projecting parts of equipment.
Metal protectors across doors at level of rubber band and also 10½" wide kicking plates at bottom of doors to bed areas, clean utility, dirty utility, treatment room and kitchen.	Fixings for door standards have had to be reinforced and facings given a metal protection at protective strip height.

11. Ward corridor

Description	*Comments*
Painted plaster wall: semi-gloss surface. Broken white shade.	Pleasing effect. Some highlighting noticeable at night in spite of the semi-gloss surface.
10 pendant and 4 recessed (night) ceiling lights (tungsten)	Night lighting unnecessarily bright. Position of some lights causes inconvenience by shining into bed areas.
Projecting fire hose and box of mattress lines.	Would have been better recessed.
Borrowed light glazing from 6'10" to 8'10" from the floor, at each 4 bed room.	
No observation windows in walls of bedrooms. Glass panels in doors 4'0" from floor level and 2'1" x 2'4" in area.	Restricted facilities for nurse observation regarded as a major defect.
Two radiators - one at each end of corridor - free standing with shelf above.	Constitute only a minor obstruction, but created cleaning difficulties.
Combined call light, buzzer and cancel button at door of each bedroom and at nurses' stations. Telephone light outside sister's office.	Some nurses had difficulty in reaching the cancel buttons. The call system should extend into bathrooms, W.C.s and day rooms.

Description	*Comments*
(2) Nurses' stations	
The two nurses' stations are shallow recesses off the central corridor fitted with shelves, cupboards and a small sink.	No writing surface. (The original intention of providing a free-standing desk was not carried out.) No observation of bed areas. Test room sink with goose neck tap only used for hand-washing and unsuitable for this. Cupboard for reagents and specimen glasses not used as tests performed elsewhere.



12. Nurses' station: Ward 6

Description *Comments*

(3) Cupboards

At two points in the main corridor there are groups of three cupboards each containing 5 shelves 12" deep.

Although flush with the corridor wall, the use of these cupboards tends to cause some obstruction in the main corridor at busy periods.

13. Cupboards in ward corridor

(4) Nurses cloakroom and W.C.

Located at the ward entrance. Vestibule 4'7" x 5'3" with quarry tiles on floor.
Six hooks for cloaks.
W.C., 3'11" x 5'3", with tiled floor.
Cloakroom 13'9" x 10'9".
Twenty metal lockers: two chairs: wall mirror.
Lino tiles on floor.

If central changing area was available, the difficulties experienced with this accommodation would be avoided. These difficulties are accentuated by frequent rotation of staff who may retain a locker at one ward while working in another. With central accommodation it should only be necessary to provide hooks for cloaks at ward level and W.C. facilities. Ventilation between W.C. and Nurses' Cloakroom is undesirable.

Description	*Comments*
(5) Day room	
Floor area 20'0" x 19'6". Lino tiles on floor; acoustic ceiling 8'7" high. Window full length of outer wall above tiled sill, 2'0" broad and 2'8" high.	The area of this room is more than necessary for 28 beds with the type of patient admitted. Before enclosure it was too exposed and draughty for regular use by patients, though in other wards of this kind meals were served to ambulant patients in this area. After enclosure, observation of patients is very limited.
Originally an open space but later enclosed by partition wall from floor to ceiling using opaque glass above 3'0". Door has a clear glass panel 2'0" wide x 3'6" high.	The room is mainly used by patients for viewing television, or by relatives as a waiting space. Even after enclosure, it does not achieve a suitably domestic character, being large and without any feature to act as a focus for groups of patients.
Four pendant ceiling lights. Venetian blinds. Assorted chairs, tables, a television set, pictures and plants.	The large venetian blinds were inclined to stick and be difficult to manage.

14. Day space before partitioning

15. Day space after partitioning

Description	*Comments*
(6) Rooms containing 4 beds	
Four rooms each with 4 beds are arranged on one side of the central corridor. Partitions between rooms are solid. Doors are sidehung, 6'8" high and 3'6" wide, with a glazed panel 2'1" x 2'4". Ceiling height is 10'0". The rooms have a floor area of 19'6" x 21'0" giving bed centres of 7'6"- Distance between bed ends is 6'6".	The rooms are light and attractive in appearance. Passing observation is extremely limited, only the bottom part of the nearer beds being visible through the glass panel in door (photo. 17). 3'6" wide door only gives clear space of 3'3". This is too narrow for passage of made-up beds except with great care, and beds with cot-sides will not pass through. Height of doors adequate for apparatus. The doors were frequently left open because they impeded staff movement, but when standing open they obstructed access to the bed behind.
Space within bed curtains is 7'3" x 8'7" and there is 3'6" between the closed curtains of opposite beds. When drawn back, curtains project 2'4".	Curtained space is marginally sufficient for general nursing care: 8' bed centres preferable.
Each ward contains 4 lockers for patients' clothes. They are in 2 sections - a bottom part 1'5½" deep, 1'9¼" wide and 6'2" high, and, above a shelf, a top part which is 1'0" deep and 1'10" high.	The lockers are of a satisfactory design, and the fact that they are in the bed area is appreciated by patients. It would be an even greater advantage to have a locker within each bed-curtained cubicle. They are adequate for clothing, shoes and suitcases. Although keys are available they are not used.
Ceilings and walls are plastered.	Although no acoustic ceiling, the noise level within bed area is acceptable.

16. 4-bed room, demonstrating the need for sitting space

17. View of 4-bed room through closed door

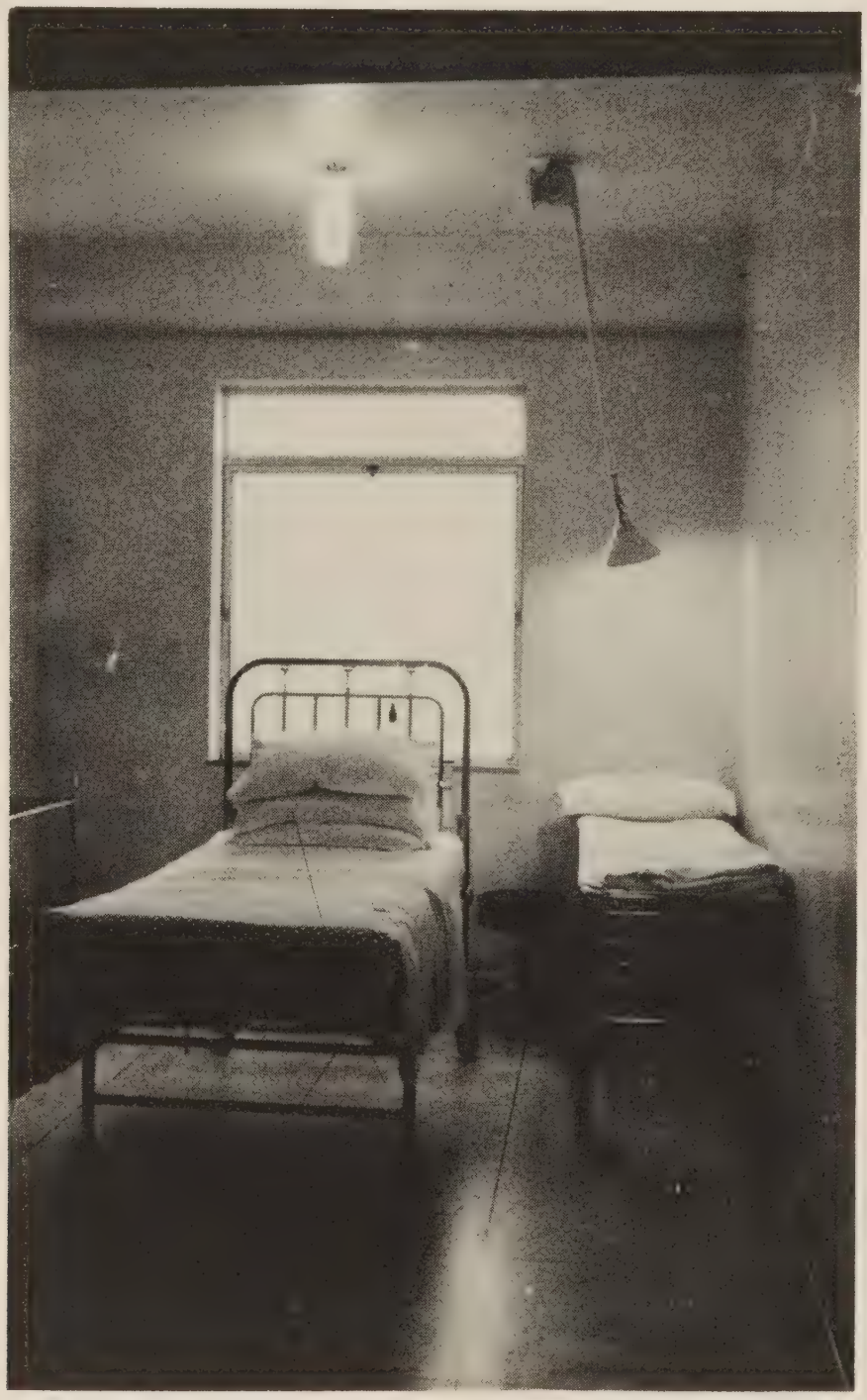
Description	*Comments*
No protective strips on walls or floor.	Wall damaged by beds and equipment.
Staff wash hand basin behind door.	The wash hand basin is contained within one of the curtained areas which restricts its use.
Window extends the full width of the wards above a 2'0" wide tiled sill which is 2' 8" above floor level.	Rather than use the day room, patients frequently prefer to sit at their bed areas or near the window sill (photo. 16).
High level windows provide borrowed light to the corridor. Each room has 2 pendant ceiling lights, 4 bed-head lights and 1 recessed night light 2'0" above the floor. The fixed bed-head lights have no projecting arm, are fixed 6'0" from the floor, and have chains of varying lengths (6-12").	Difficulty has been experienced in using venetian blinds to control solar heat gain and glare. Bed-head light switches not easily accessible to patients. No dimming device results in bed-head lights being covered with coloured cloth, as required, for frequent nursing care at night. Night light slots not effective.
Radiator located under the window sill.	Satisfactory.
Two oxygen and suction points in each room.	This provision appeared to suffice.
Fitting for clinical thermometer on wall near each bed.	Individual thermometer containers should be fitted to beds.
Floor - lino tiles.	
Beds	
Two types of bed are used. The more elaborate one, of which there are 25 in the hospital and 8 in Ward 6, was obtained primarily to facilitate work with patients immediately after operations.	The more expensive bed is useful in the post operative phase but, without an adjustable platform, is too high for some nurses and for elderly patients. In general, a less complicated bed might serve post-anaesthetic and routine nursing functions. If a single type of bed can be used throughout a ward unit, transfers of patients from bed to bed can be avoided.
Chairs	
Some chairs for visitors are kept in the bed areas, others in dayroom. Patients' armchairs require to be brought from the day room.	Bed areas should be designed to allow space for the requisite number of chairs.
Overbed tables	
Standard design; four legs, 2 castors.	Space occupying and difficult to manipulate.
Bedside lockers	
Wooden cabinet type.	Servicable standard pattern.
(7) Single rooms (2) (See (15) below)	
The two single rooms on either side of the nurses' station furthest from the ward entrance are 9'8" x 19'6" in floor area.	The floor area of these rooms is unnecessarily large. 120 sq. ft. adequate if room suitably proportioned in relation to long axis of bed, (i.e. not less than 11'-0").
Doors 3'6" wide.	Clear door space only 3'3". (See (6) above).
Wash hand basin and towel rail.	

Description	*Comments*
Pendant ceiling light Bed-head light Light over wash hand basin Night light in wall 1'10" from floor.	Switch for bed-head light not easily accessible to patient. Night light ineffective.
Metal clothes locker	Built-in locker preferable.
Bedside locker	Standard pattern.
Oxygen and suction	Oxygen and suction points an advantage.
One room has an extract fan	Specially installed for patient with a chronic infective condition.
(8) Eight bed area	
Entry by double glass swing doors. Area of 19'0" x 45'0" with the 8 beds arranged in two groups of 4 across the far end of the ward unit from the main entrance. The bed areas are screened by two banks of 4 lockers for patients' clothes. Bed centres 8'0" apart. 1 wash hand basin.	Less seriously ill patients are usually grouped in this area as it is more remote from main centres of nursing activity. Supervision is less restricted than in 4 bed or single rooms and movement of beds less impeded. Wash hand basin included in 1 bed curtain area which restricts its use.
Oxygen and suction at 1 bed only.	An oxygen and suction point at one bed in each group of four would have been an advantage.
Bed-head lights) Night lights (2)) as above Ceiling lights)	
Lino tiles on floor.	Condition remains good.
Windows across each end wall above the 2'0" wide tiled sill.	Control of solar gain and glare difficult.
Small balcony on East side 9'0" x 6'0"	Never used.
Double glass doors to internal escape stair.	
(9) "Solarium"	
Beyond the 8 bed area through the double glass doors (above) and entered from a landing on the escape stair is a room (10'10" x 17'6"). This was originally intended as a day space but is being used temporarily as an office by the geriatrician's secretary.	Inconveniently sited as regards nurse supervision. Draughty, and not found convenient as a day space or - as occasionally used - for extra beds.
(10) Bathrooms and W.C.'s	
Sanitary accommodation is in two groups situated on the side of the ward opposite the 4 bed rooms. Each group consists of:- two washing spaces (each with 2 wash hand basins), measuring 8'7" x 5'9", and two bathrooms 8'7" x 6'7" with free-standing baths, effective door width 2'6". Wall tiled to 6'10" from floor. Terazzo floors. No showers.	Four baths and four W.Cs. grouped centrally have proved more than sufficient for 28 beds as a high proportion of patients are bedfast or semi-ambulant. The bathrooms are adequate in floor area for ambulant patients but too small for the use of wheel chairs. One bathroom of 80 sq.ft., plus 3 showers might have been preferable. They have no call system. The wash basins are in the foyer of the bathrooms, have no privacy, and are not extensively used. No shelf for toilet articles and no hooks for dressing gowns.

Description	*Comments*
W.C. compartments 5'1" x 2'10" with a clear width of 2'1". Doors open inwards.	No call system. Compartments too small and doors too narrow for sani-chairs. 20 sq.ft. is a suitable area. Doors should open outwards.
(11) "Duty" Room	
9'8" x 16'9" in floor area. Used mainly for the storage of medicines and dangerous drugs, syringes, equipment, and large pharmacy baskets (2'0" x 2'0" x 1'2"), accommodates 2 medicine cupboards; 1 medicine trolley; table for sterile syringes; table for blood testing apparatus; suction apparatus; disposal bin; W.H.B. Vinyl tiled floor.	As now used, the space would have been better incorporated in the clean utility (preparation) room. It increases the length of nurses' journeys, because preparation for one procedure frequently involves the use of both rooms.

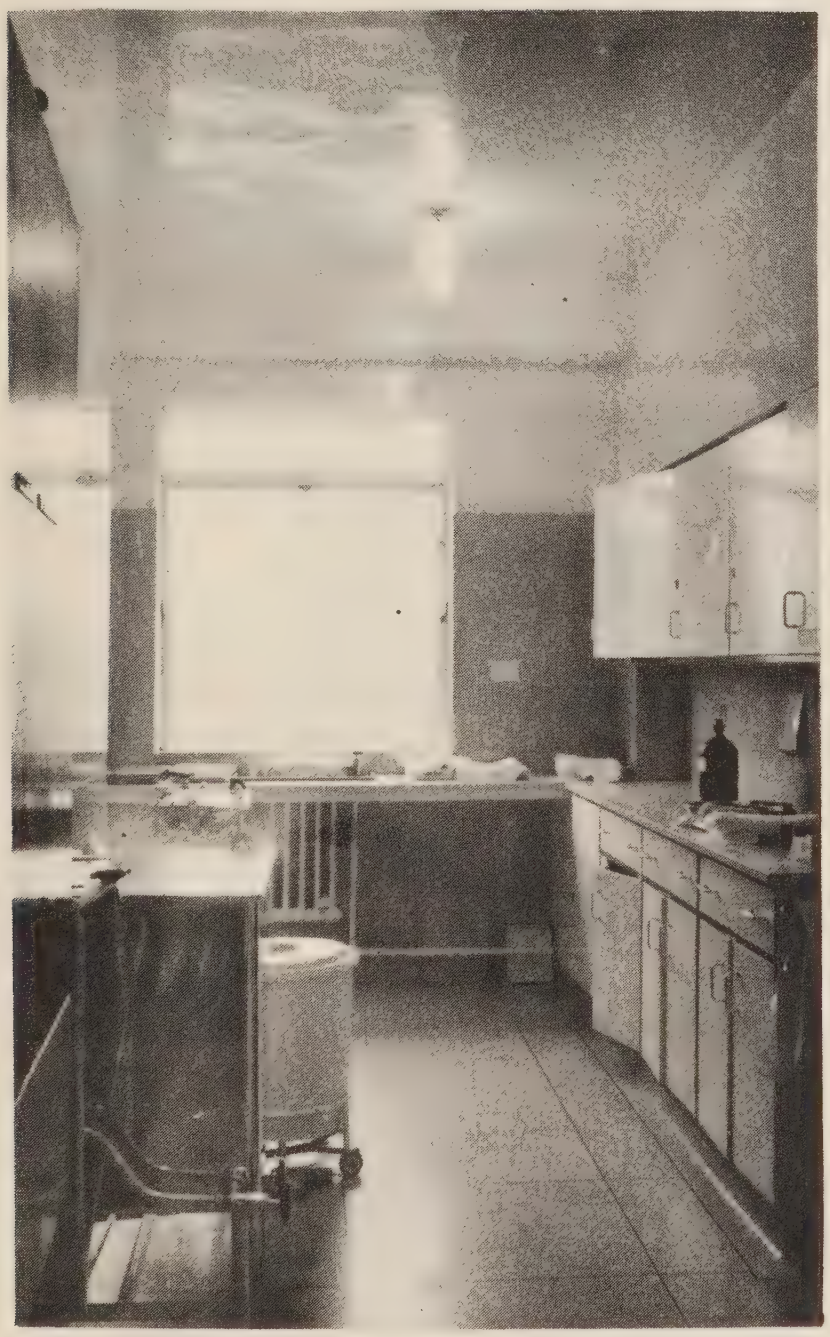
18. "Duty" room

Description	*Comments*
(12) Treatment room	
9'8" x 16'9" in floor area. Door from corridor 3'3" (clear width). There is a door 2'6" wide between this room and the adjacent clean utility room. Ceiling light on adjustable and telescopic arm, 2 fixed lights. Sink unit and towel rail with splash tiles on wall. Examination trolley. Metal Cupboard. Trolley. Disposal bin. Terazzo floor. No special provision as regards air pressure. No piped oxygen and suction.	Almost adequate in size for its main purpose, but adversely affected by the difficulty in bringing in a bed or trolley. Ceiling mounted light satisfactory. Piped oxygen and suction would be an advantage.

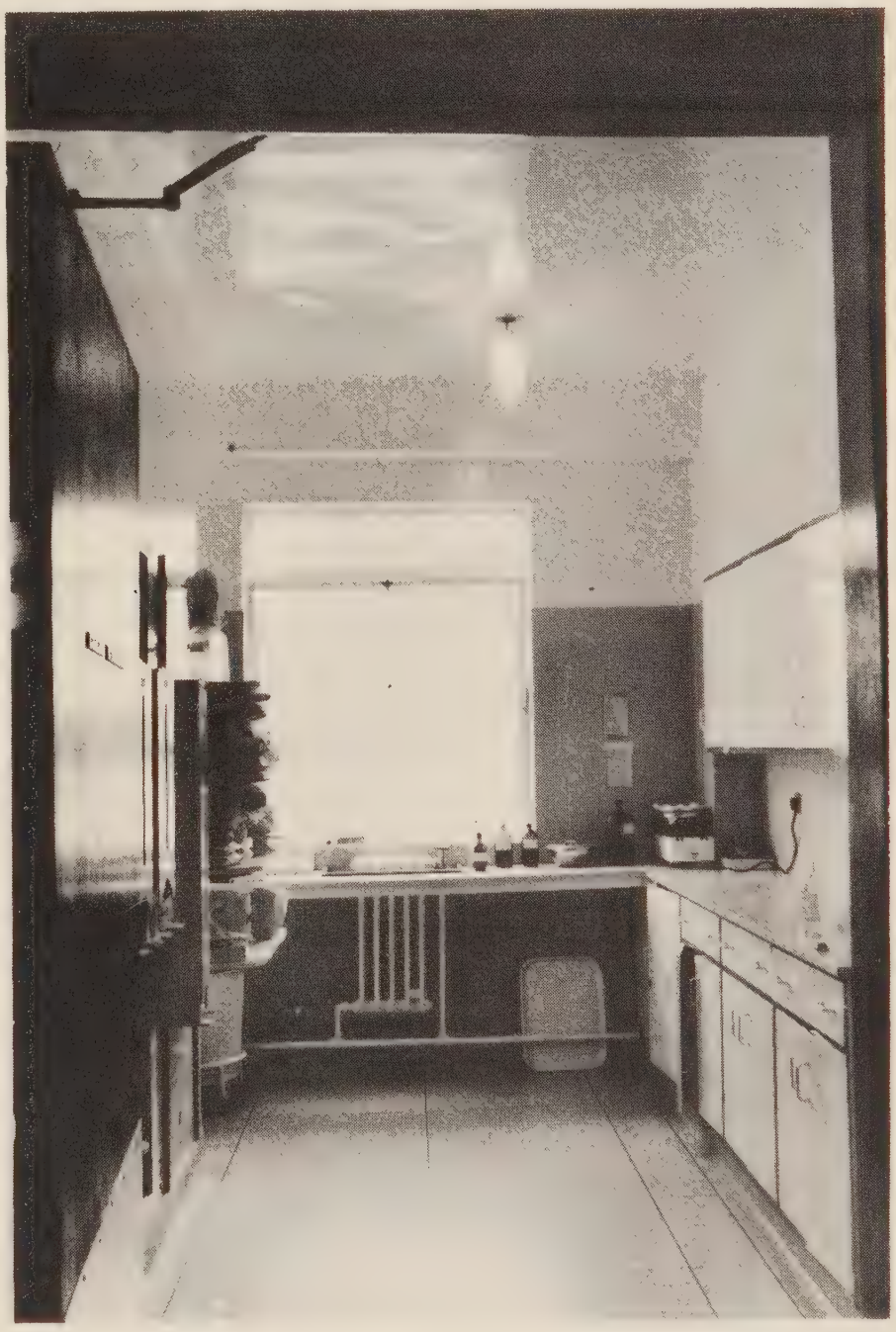


19. Treatment room

Description	*Comments*
(13) Clean utility room	
7'8" x 16'9" in floor area. Recess at one corner 4'0" x 2'9" connecting with hatch to dirty utility room. Walls tiled to 6'10" from floor. Terazzo floor. Wash hand basin with elbow taps. Working top with drawers and cupboards.	Before the sterilisers were removed, this room was frequently congested with nurses working at the sterilisers or preparing items for sterilisation. Even after removal of sterilisers, the floor area is some 30 sq.ft. too small to accommodate all the items, including linen, which should be grouped in a preparation room.
2 Steam sterilisers (at outset of survey).	The working top is unnecessary if suitable trolleys used. As designed there is no trolley storage space, and they are kept in the adjoining treatment room.
5 Dispensers and 4 shelves for sterile packs (at end of survey)	Shelves on inner sides of doors badly aligned in relation to items to be stored, resulting in storage on open working tops. Cupboard design unsatisfactory. Fixed shelves not easily accessible and spacing unsuitable. Drawers behind cupboard doors awkward in use.
Duct access	Direct access to pipe duct unsuitable in this room.
Two ceiling lights.	



20. Clean utility room before central sterilisation



21. Clean utility room after central sterilisation

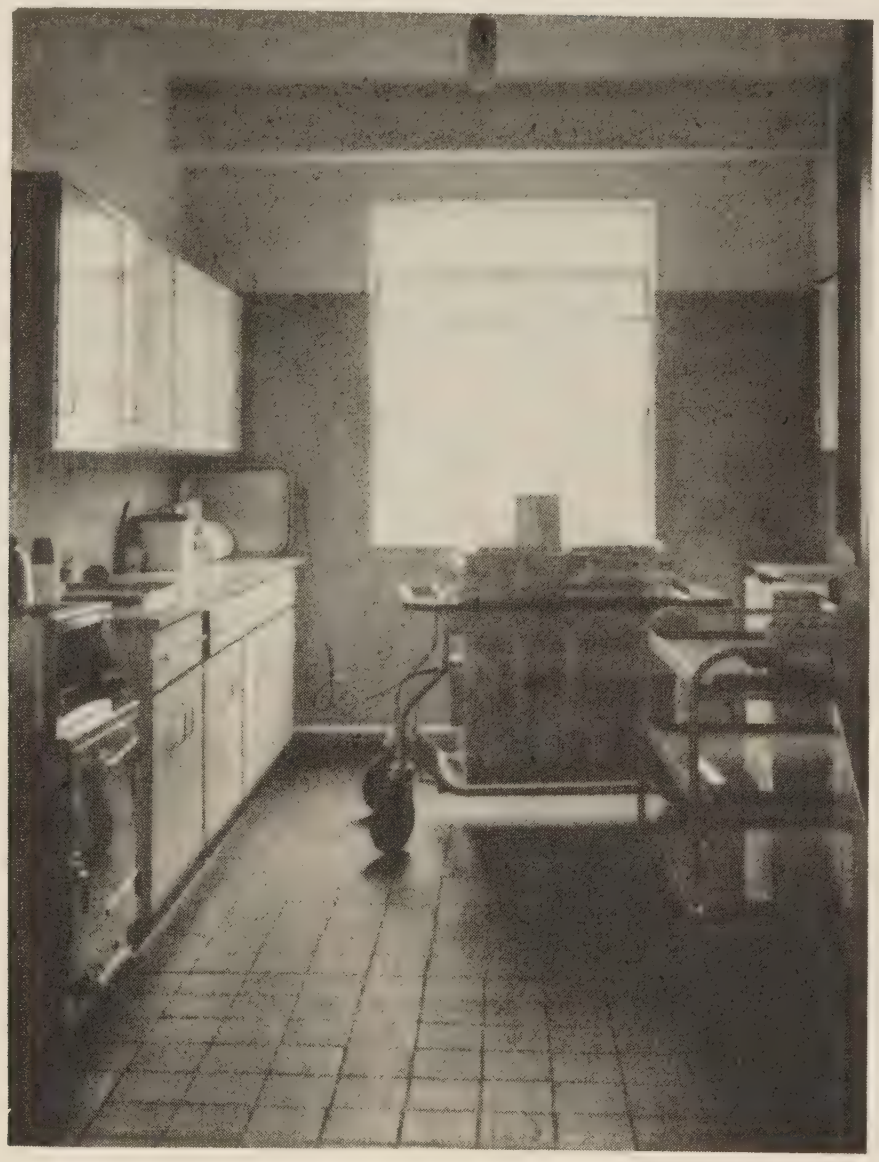
22. Sterile pack dispensers in utility room

Description	*Comments*
(14) Dirty utility room	
9'7" x 16'9" in floor area. Walls tiled to 6'10" from floor. Terazzo floor.	This room is used as both the general disposal room and the sluice: this is not satisfactory. Overall floor area would be adequate for both functions if trolley parking removed and bundles of dirty linen not stored for 24 hours. Also used for storage of flowers at night. Bedpan washer not used during surveys. Bedpans emptied and hosed at sluice sink. Stainless steel bedpan rack too high and noisy in use.
Bedpan washer and bedpan steriliser Bedpan rack (4 pans) Urinal rack (16 urinals) Sluice sink and slab Working top and lab. sink Purpose designed trolleys accommodated.	
Chute opening (1'6" x 2'2½") near door leading to linen collecting point on ground floor.	Linen chute not used. Early difficulties over bagging and collection.
Cupboards	There is a considerable amount of cupboard space, but not designed for the functions involved. There is no suitable storage for laboratory specimens.

23. Dirty utility room

Description	*Comments*
(15) Single rooms (2) (see (7) above)	
These rooms are on either side of a nurses' station near the ward entrance. Floor areas 16'9" x 9'9" plus an alcove 4'3" x 3'0". Doors 3'6" wide No extract ventilation Oxygen but no suction	These rooms are larger than necessary for a single patient. 120 sq.ft. adequate if room suitably proportioned in relation to long axis of bed (11' 0" minimum). Lack of suction a disadvantage in practice.
Other fittings and furniture as at (7) above.	Comments on lighting as at (7) above.
(16) Kitchen	
Floor area 16'9" x 10'4" Walls tiled to 10'8" from floor Quarry tiles on floor	Larger than necessary even without central dishwashing. Correct size would depend on range of functions to be undertaken.
Working tops 3'1" high along side walls with cupboards above and below.	Amount of cupboard space should be related to the anticipated storage needs and could in this case have been reduced.
Refrigerator 8.4 cu. ft.	Large: mainly used for milk bottles and chilled water.

Description	*Comments*
Electric Cooker	
Dishwashing machine	Little used at the time of the study. No proper provision for the temporary storage of empty milk bottles.
Water boiler (gas)	Spout too high - 1'9" from working top. Leaks. Kept boiling and unsatisfactory for making tea.
Stainless steel sink unit with food waste disposer.	Both noisy.
Glazed viewing panel 2'1" x 2'4" in door.	Door always open.



24. Ward kitchen

(17) Sister's office

Floor area 10'0" x 16'9" Near ward entrance Two telephones (1 G.P.O. and 1 internal) Normal range of furniture, lino tiles, viewing box, wash hand basin.	Ample size although used by medical staff as well as the Ward Sister. Situation good for visitors but not for patient areas.

Description	*Comments*
(18) Linen room	
Floor area 10'4" x 19'5" Lino tiled floor Slatted wooden shelves 1'6" wide working top at window	Entered through vestibule 6'0" x 3'2". Used to store bulky equipment, e.g. bed cages, cot sides. Linen unpacked in main ward corridor and carried to shelves, as door too narrow to allow laundry baskets to pass. Location bad in relation to bed areas. Used as changing room by male orderlies. This is undesirable.
(19) Domestic service room	
Floor area 6'9" x 5'10" Recessed cupboard Sink and draining board, and sluice sink shelf 4'10" x 10" Wall pegs for mops, brushes and hoses Quarry tiled floor	Entered as (18) above from vestibule in which a galvanised iron rubbish bin located and empty bottles collected. This room is too small to accommodate the necessary fittings and equipment. Effective floor area is further restricted by an inward opening door.
Frosted glass panel (2'0" x 2'4") in door.	Unnecessary.
(20) Clinical laboratory	
On both the first and second floors, a clinical laboratory was designed to serve two ward units and was located between them. The working area is approximately 16'0" x 8'0" and is approached through a storage area of 10'0" x 7'6". On the second floor, this accommodation is now used as a blood transfusion unit.	Twice as large as necessary for the range of work undertaken.

Heating and ventilating

56. There have been recurrent problems over the heating and ventilating of ward areas. The heating installation in the main hospital can be controlled separately through each of two main circuits by an outdoor/indoor temperature regulator. Difficulty was experienced in the initial stages in establishing a proper heat balance between the old and the new buildings as the latter tended to be overheated in order to maintain a comfortable temperature in the old ward. Demolition of the latter helped to resolve the problem, but complaints of over-heating in the new building still persist. Steps are now being taken to establish a comfort pattern and to re-adjust circuits as necessary throughout the hospital. Subjective views on acceptable conditions vary widely, and a uniform temperature level for all areas is neither easy to achieve nor equally suitable.

57. There is a tendency on the part of both patients and staff either to accept changes in the temperature level as inevitable or to complain in very general terms. The complaints are certainly not entirely attributable to the calibration setting of the automatic control of the heating system. The position is affected by the slow response of local manual control of the radiator valves and aggravated by the lack of ventilation due to difficulties experienced by staff in opening windows in ward areas. The glazing extends the full 21 ft. breadth of the 4-bed rooms, approximately 6 ft. high; there are two top-hung lights and two side-hung casement windows. The opening details have been found unsatisfactory, maintenance expensive and, when opened, complaints of draughts have been frequent.

25. Window wall of 4-bed ward.

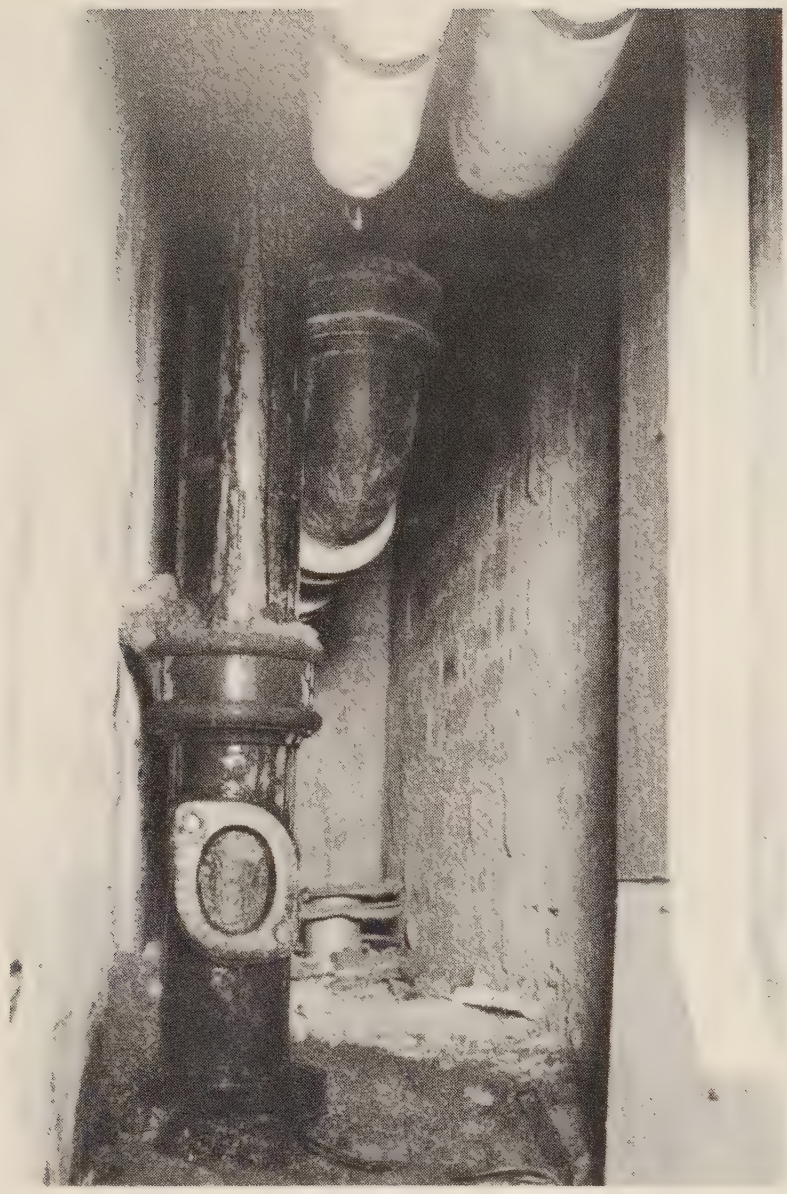
58. The effects of solar heat gain on the south-east and south-west elevations add to these difficulties, especially in the spring and early autumn. Staff have difficulty in opening this particular type of venetian blind which is heavy, unwieldy and in certain cases difficult to adjust because of the proximity of a wall next to the operating gear. When used in conjunction with open windows, the blinds cause annoyance by tapping and by sweeping flowers etc. off the sill.

59. The medical staff toilets in wards 7 and 9, which are internal rooms, are ventilated into adjoining offices by means of a louvred glass ventilator. This is contrary to good practice.

Electrical services

60. (1) *Corridor Lighting.* The illumination values in the ward corridor vary from 4 to 6 lumens/square foot and under night lighting conditions from 1½ to 5. This disparity between the night lighting values is due to the fitting at some points of larger wattage lamps than those originally intended. Where the resulting light-spread penetrates the bed areas through borrowed lights from the corridor this has proved to be a nuisance to patients at night.

(2) *Bed Areas.* The two ceiling lights give a general illumination value of 5 lumens/square foot at floor level increasing to 7 lumens with the bed-head lights on. With the grey rayon bed curtains drawn, the illumination value over the bed areas varies from 9 lumens at the head of the bed to 4 lumens at the foot. The bed-head light fitting is located directly behind the patient's head; having no projection, it is of limited value for examination purposes. The lamps are not fitted with dimming control and the nursing staff use a coloured lamp in the fitting over the wash hand basin and fix temporary covers over lights at particular beds to give a subdued light. As noted above, the low-level night light is so located and masked that it serves no useful purpose. The nurse call system from the bed-head unit consists simply of a bell push with the usual indicator light at the door and an audible alarm at the nurses' station. It is unfortunate that the system is not extended into the patients' bathrooms, toilets or dayroom where the need for nurse assistance may occur.



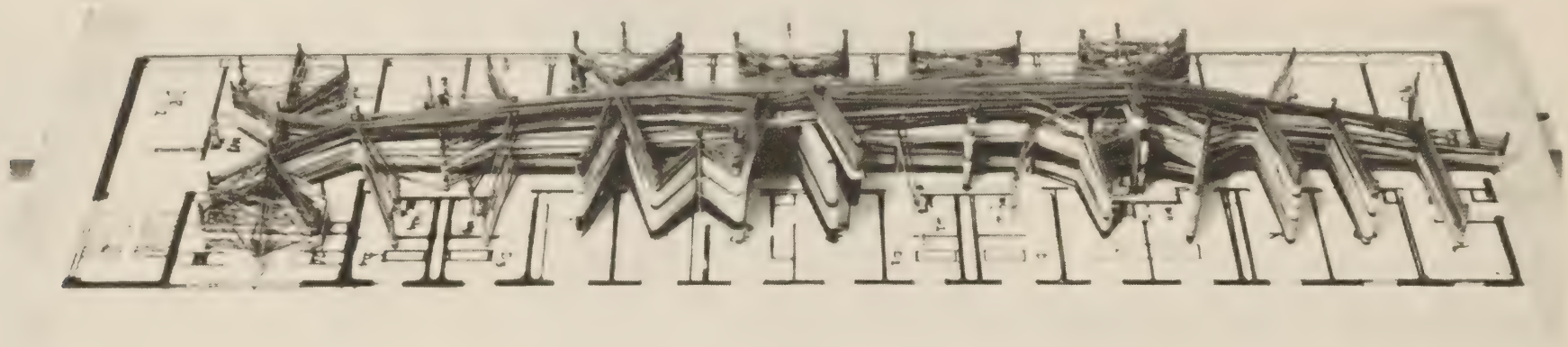
26. Detail of narrow vertical duct

61. The main services, steam and condense, heating flow and return pipes, hot and cold water services, soil and vent pipes, rain water drainage from the flat roof and electrical trunking to wards are all accommodated in a deep but comparatively narrow vertical duct approximately 16'0" x 1'6". Access to this is through a door in the clean utility room and to smaller ducts by removable panels in the ward corridor, but the congestion of services at the base presents almost insuperable problems to the building and engineering maintenance staff. The absence of suitable lagging on cold water pipes has led in some ward areas to damage to the ceiling tiles from condensation.

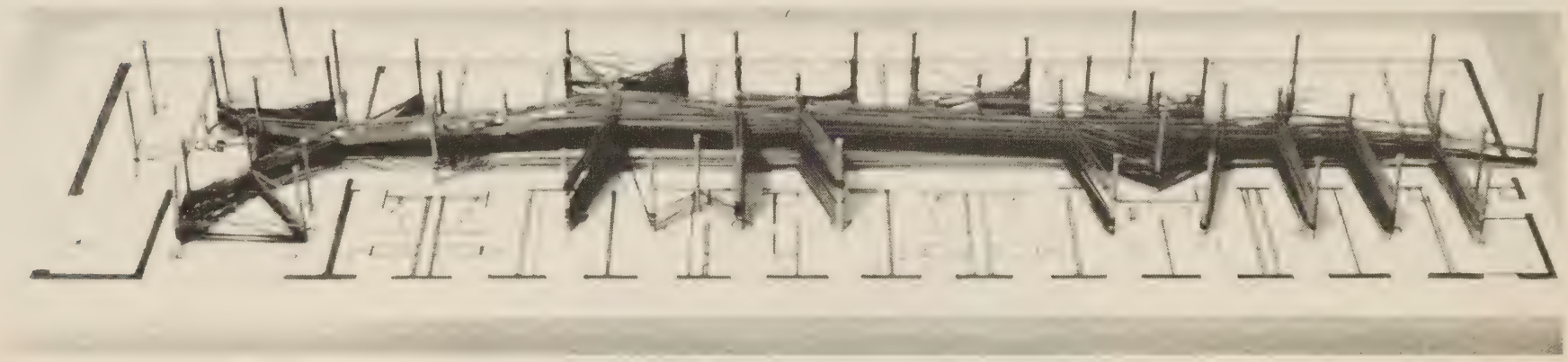
Detailed studies

62. Two surveys of nursing journeys were carried out in Ward 6. These showed that additional walking was caused by the relationship of certain rooms and facilities to the bed areas, to each other, and by their method of use. For example, during the first ward study, there were 196 visits by nurses in 12 hours to the linen room, which is situated near the ward entrance but at a considerable distance from the bed areas. This also occurred in relation to other rooms; 350 visits to the ward kitchen were made by nursing staff in 12 hours, and 32 telephone calls were answered in Sister's room. The difficulty in passing beds through the ward doors rendered their movement to the treatment room inconvenient, or impossible if they had extra attachments. This resulted in either the patient being transported by trolley or, as was the case for all but ambulant patients, in treatment being undertaken behind curtains at the bed side. This difficulty in moving beds was also responsible, at least in part, for seriously ill patients requiring frequent nursing attention being located in widely separated areas of the ward unit, and thus causing additional journeys to provide adequate supervision and nursing care. The enclosed rooms also caused additional walking as each room had to be entered before observation was possible, and, due to lack of identifying features, instances occurred of nurses going into the wrong room.

63. The observed nursing journeys were plotted in the form of string diagrams on plans of the ward. The string diagram technique provides an accurate picture of the nursing journeys actually undertaken during the period of a survey. Nursing visits to patients totalled 1,799 during the day, and 838 during the night. The maximum number of visits to any one patient by day was 122, and by night was 125; these figures represent a nursing visit at least every six minutes on average.



27. Composite string diagram (day)



28. Composite string diagram (night)

Photograph 27 shows the journeys made by all the nurses during one 12-hour day period superimposed in the plan of the ward unit. Photograph 28 shows similarly the total nursing journeys at night. The study of nursing journeys at night was undertaken to check whether the pattern varied significantly from that observed by day. Such studies showed clearly how activity is concentrated on those patients requiring constant nurse supervision or care, and the value of the convenient grouping of such patients when the minimum number of staff is on duty. For comparative purposes, the day and night studies should be carried out consecutively.

64. After the first study, additional and more suitable equipment was obtained, and various changes made including the use of sterile packs and the elimination of sterilisation at ward level. This was done as a preliminary to a further study, and was, in fact, in anticipation of similar changes which would probably have been undertaken as soon as funds became available.

65. At the second survey it was noted that a considerable amount of nursing time, previously spent in the preparation and sterilisation of items of equipment, had been released for other nursing duties. While "job assignment" was still practised, and although two additional junior student nurses were on duty, the total length of all nursing journeys was not significantly increased, and, in fact, the average distance per nurse was reduced by about 7 per cent. The working load during the two surveys was broadly similar, though some additional work and walking was involved as the result of two seriously ill patients dying during the second survey, and because some of the nursing staff were not familiar with the use of sterile packs.

66. Team nursing was envisaged at the planning stage, and, in the opinion of the review team, it would not be impossible to implement it. This system of nursing is not, however, facilitated by this particular design. The planning assumption was that each of two nursing teams would be based at a nurses' station and would share a central group of ancillary rooms. The single nurses' "duty" room would be used by both teams, but a set of bathrooms and W.C.s would be available to each section of the ward.

This latter provision, together with the inclusion of day space at each end of the ward, was intended to give greater flexibility in use. These planning assumptions have remained unfulfilled, partly because of a preference for the practice of "job assignment", and partly for reasons inherent in the design. The main ancillary rooms occupy a central position, but the kitchen and the linen room are not equally accessible to teams based at both ends of the ward unit, and the nurses' stations are inadequate as focal points for nursing activity. The "duty room", which might have been used as a focal point for team nursing, is used as an extension of the clean utility room.

67. This particular ward layout has proved inconvenient in practice for the grouping of patients according to the severity of their condition and degree of reliance on nursing care. In a linear ward, this leads to a considerable increase in the amount of "corridor" walking between patients. It might be possible to group the patients requiring the most intensive nursing care in, for example, the two 4-bed rooms opposite the clean and dirty utility rooms, but the restricted door spaces and the relatively narrow central corridor have already been noted as inhibiting factors in the free movement of beds. Again, it was undoubtedly the case at both surveys, that the restriction of observation panels to the doors of bed areas led to additional nursing journeys for the purposes of supervision.

68. The introduction of sterile packs and the elimination of sterilisation at ward level led to the release of a certain amount of nursing time which was spent on bedside care. It is considered that if team nursing was undertaken with the emphasis on "patient" rather than "job" assignment, and if patients were grouped as indicated above, a further improvement in organisation might be achieved. It is recognised, however, that some points of detail in the design of the ward are not favourable for this, and that the practice of team nursing may lead to problems in the allocation of various categories of staff. The survey group were satisfied that if it could be implemented, it would reduce the amount of nurse walking in a ward of this kind and would increase efficiency, but it could not be claimed that changes would lead to a major reduction in the total number of nursing staff. Further factors which influence the overall staffing position include:

(1) The heavy nursing load which is greatly increased by the use of pre-convalescent accommodation.

(2) The reduced supervision in enclosed wards of this kind which leads to additional problems of communication and administration for the nursing staff.

(3) The need to release ward sister's time for the teaching of student nurses.

(4) The proportion of senior and more experienced nurses available as distinct from junior student nurses.

Ward 5: paediatric ward

69. The paediatric ward of 29 beds is situated at ground floor level beneath Ward 6, and is of similar design with differences only in detail. A survey of nurses' journeys was undertaken in this ward and string diagrams prepared for study. The following points were noted:-

(1) Patient observation

Observation of the bed areas is greatly improved by windows in the corridor wall, 5'0" x 3'6" in area and 3'0" from the floor level (Photos. 29 and 30). In addition, the partition walls between bedrooms are glazed above the height of 2'6".

29. 4-bed room paediatric ward, showing observation from corridor

30. 4-bed room paediatric ward, showing observation from ward

(2) Nurses station

One nurses' station was improved by the addition of a fitment containing a writing top and drawers. This proved possible as the space of 4' 10" left between the front of the new nurses' station and the opposite corridor wall was sufficient to allow a cot to be manoeuvred.

31. Nurses' station: Ward 5

(3) Playroom

There is a playroom 18'0" x 19'6" in floor area at the far end of the ward from the main entrance. This is of ample size.

(4) Bed areas

Compared with Ward 6, there are minor differences in the floor areas of the bedrooms. Four-bed bays are 17'0" x 21'0" and this is sufficient for four cots. The three single rooms measure 16'0" x 9'0", 16'0" x 10'3", and 16'9" x 9'6", but two of them have insets of 4'3" x 3'0". There is also a mother and baby room measuring 16'9" x 9'9". These rooms are of adequate size for their functions. Observation is facilitated by glazed panels in the doors, but a mobile screen had to be used to give sufficient privacy in the mother and baby room as no blind is provided. There are two rooms containing two cots; these rooms measure 16'0" x 10'0" in floor area. For each four-bed bay, three double-ended drawers accessible both from the bed area and from the corridor are provided. They measure 2'9" x 2'0" x 8". It would have been preferable to have had four drawers for each 4-bed area, even if each had to be slightly smaller in size. Oxygen and suction have been provided in each of the four-bed rooms with oxygen only in one single room and in the mother and baby room. Oxygen and suction are available in the two-bed room.

(5) Ancillary rooms

The general ancillary rooms are similar to those described for Ward 6, but the area used for the nurses' cloakroom in Ward 6 has been made into a consultant's office and consulting room. The "duty" room in Ward 6 has become the sister's office: the sister's office in Ward 6 has been used to provide a milk kitchen: the solarium was planned in this ward as a doctors' room and clinical laboratory. There is a generous verandah space outside the four-bed bays which is seldom used as there is a fear that articles dropped from the ward above may endanger the patients.

Ward 10: "dermatology" ward

70. This unit consists of two four-bedded rooms and two single rooms adjacent to the dermatology out-patient department, but in fact, is not occupied by patients suffering from skin diseases. The bed areas are similar to those already described in Ward 6, and the ancillary rooms are broadly of the same pattern.

Ward 2: geriatric assessment unit

71. As it became necessary to demolish the existing geriatric unit to make room for building in Phase 2 of the Development Plan, a new unit for 30 beds was erected early in 1962. The new ward, which contained 32 beds at the time of the survey, is a free-standing single storeyed block planned in depth, with the bed areas on the periphery on either side of a central core of ancillary rooms (see appendix "F"). It took 11 months to build, cost £45,000, and is proving satisfactory in use.

32. View of geriatric assessment unit

Description	*Comments*
(1) Entrance hall and corridor	
The entrance hall and corridor are reached through two sets of glass doors enclosing a vestibule. This vestibule measures 11'3" x 6'0" and is an adequate and attractive entrance to the unit. The entrance hall itself which is also used as a waiting area, has an acoustic ceiling 8'0" from floor level. The floor is covered with lino squares and the area is effectively sound deadened. There is a 10" protective wall strip, the top of which is 3'6" from the floor. The clear width across the corridor is 6'10" where the protective strip projects for use as a hand rail.	The width of the corridor is sufficient, except where it is used as a parking place for a large stair walk; this piece of equipment is 10'0" long x 2'10" broad. The protective strip on the wall is of limited value as projections from, e.g., beds with cot sides, may still hit the wall.
(2) Sister's office and doctor's office	
These offices of 12'0" x 12'0" are adjacent rooms opening off the entrance corridor.	Ample in size and conveniently placed.

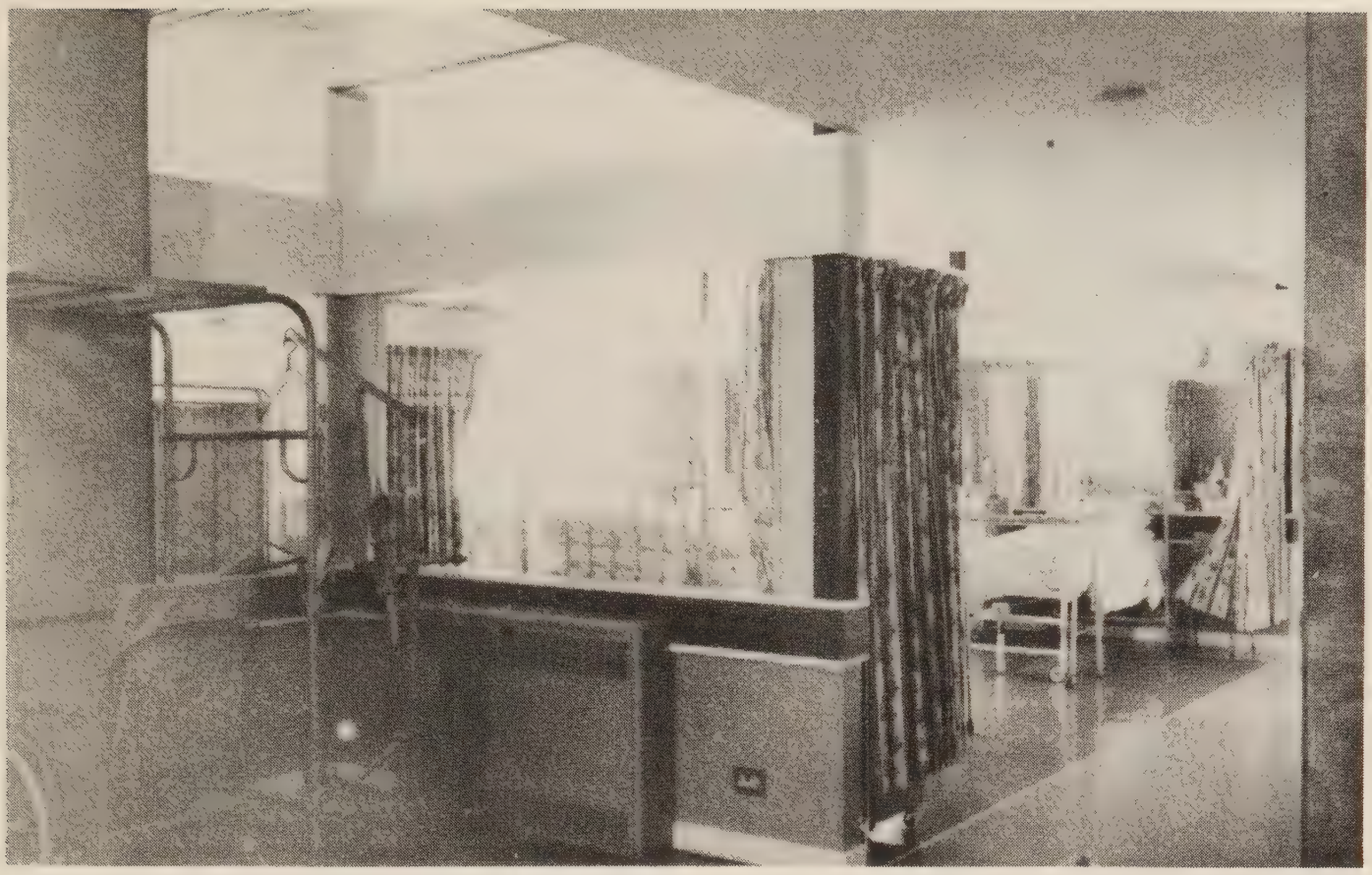
Description	*Comments*
(3) Staff W.C. and W.H.B.	
These facilities are provided in two adjacent compartments within an area of 7'3" x 7'0". Having an internal location, the W.C.s are mechanically ventilated.	The areas are sufficient in size and the extract ventilation is satisfactory.
(4) Day room	
A large room 32'0" x 14'6" with two double doors each having a clear width of 5'7". This room can be divided into two areas by a folding partition.	The room accommodates 20-25 patients comfortably. Wheelchairs or specially fitted geriatric type chairs are used. Exercise space is limited. Division into two separate rooms has seldom been required.

33. Day room: geriatric assessment unit

(5) Kitchen	
The kitchen is 11'3" x 13'3" and contains a cooker, refrigerator, sink and draining board, dish washing machine, working top and cupboard space. The floor is tiled. The door has a clear width of 2'10".	This room is larger than necessary as the main meals to the unit are provided from a central kitchen. If central dish-washing had been available, a smaller kitchen (e.g. 80 sq. ft.) would have sufficed.
(6) Physiotherapy and occupational therapy store	
This store of 12'0" x 18'3" is used as a base where equipment including looms, walking aids, ultra-violet lamps and other materials are kept. It contains a sink and cupboard space and is used by the occupational therapist for the preparation of materials.	Although the equipment is generally taken to the patient areas for use, this room is slightly too small for both physiotherapy and occupational therapy materials.

Description	*Comments*
(7) Office This room of 12'0" x 5'10" is adjacent to the physiotherapy store and is used daily by the physiotherapist, occupational therapist and, twice weekly, by a chiropodist.	This room is too small for use by more than one officer at a time.
(8) Domestic service room This room has an internal position off the main entrance corridor. It is 7'3" x 6'9" in floor area and contains a hopper, sink, cupboard, shelves and brush hooks. There is a tiled floor and a roof light.	The area is slightly too small for the storage of equipment and for use by one and occasionally two members of the domestic staff. The square shape is particularly suitable.
(9) Nurses' cloaks This room is 11'5" x 7'6" in floor area with an adjoining W.C. and W.H.B. cubicle which is 5'0" x 4'6". It contains a table, two chairs, one locker and six wall hooks. The W.C. compartment has a low level suite and an incinerator.	This room would be of sufficient size if used only as a cloakroom and not as changing accommodation. As changing space for perhaps 10 nurses on part-time duty, it is too small and provides inadequate privacy.
(10) Nurses' station	

34. Nurses' station: geriatric assessment unit



35. View from nurses' station

Description

There is a nurses' station in a 5'6" deep alcove in each half of the ward unit, and it consists of a writing top 6'0" long with 3 drawers. Telephone, patients' call systems and grouped light switches are located at the stations. These switches control the lights for all the bed bays, night lights, corridor lights, and a light at the nurses' station.

Comments

The nurses' stations are well placed in relation to the bed areas and ancillary rooms. The view of the beds is somewhat restricted by bed curtains and only 5 of the 16 beds in each half of the ward unit are directly visible from it. (Photo 35). The writing top is longer than necessary. It would be preferable to have separate local switches for individual multi-bed bays.

(11) Wheelchair parking

A recess in the corridor almost opposite the nurses' station and outside the 2-bed ward is used for this purpose. It is approximately 7'6" x 7'6" in floor area.

This area is used for the temporary storage of wheelchairs, patients' hoists and stacking chairs. Its depth renders it somewhat inconvenient insofar as items are less easily accessible than is desirable.

(12) Bathroom

There is one bathroom 9'9" x 9'6" containing a free-standing bath with hand rails for each half of the ward unit. There is a call system which can be operated from the bath. Each bathroom has a shower compartment 2'6" x 2'6".

The facilities are said to be adequate for bathing patients. The shower cubicle is too small. 15 sq. ft. is a minimum size.

(13) W.C. and washing area

There are two W.Cs. and two wash hand basins for each half of the ward unit.

The floor area in the W.Cs. is adequate for sanichairs, but outward opening doors are preferable. No shelf is provided in the W.H.B. compartment

Description	*Comments*
Each W.C. has an area of 3'10" x 6'0" with a clear door width of 2'11". Doors open inwards. W.H.Bs. are separated by a partition forming two open cubicles 3'9" x 3'4". No nurse call system provided.	for toilet items. A call system is desirable but less critical as most patients are attended by a nurse when using these facilities.
(14) Linen store This store is 4'6" x 6'10" in area and the adjacent switch room 3'6" x 6'0" has been converted into a blanket store. Slatted shelves have been fitted in each store.	While relatively large stocks of linen and blankets are required, the amount of linen storage should be determined by the frequency of supply.
(15) Dirty utility and sluice room This room 16'3" x 9'0" has two doors with protective plates. It contains two bedpan washers, a hopper, sluice sink and slab, mackintosh rail, wash hand basin and working top, stainless steel bedpan rack (for 6 bedpans), a bedpan trolley, two disposal bins, one linen bin, and two sets of wall cupboards. There are two roof lights and a tiled floor.	This room is suitably placed in relation to the bed areas. It is of adequate size for the work to be performed though in general the disposal and sluice functions are better separated. The roof lighting is effective. The extract ventilation is now satisfactory after the correction of early difficulties. (See also comment at (16) below).
(16) Clean utility and treatment room This room of 16'3" x 9'0" has two doors 3'4" wide with protective plates. It contains a working top and drawers (12), wall cupboards (9 sections), a laboratory sink, W.H.B., weighing machine, disposal bin, and trolley parking space. There is a tiled floor and roof lighting.	This room was designed for the dual purposes of preparation and treatment. The latter function requiring the patient to be brought in bed to a treatment area occurs infrequently in a unit of this kind. The room is well placed in relation to the bed areas. Roof lighting is satisfactory. Floor area is adequate for the functions involved. Some exposed hot water pipes should be enclosed. If this room were transposed with the dirty utility and sluice room, it would not impair relationships to the bed areas and would permit a closer and more effective functional relationship between the preparation area (clean utility and treatment), the linen supply and the nurses' stations.
(17) Patients' clothes lockers There are 12 lockers in each half of the ward unit and these serve the four 6-bed bays. The lockers are placed in the corridor and each is 1'2" deep, 1'10" wide and 6'2" high. They have three shelves and a shoe rail.	The lockers are satisfactory.

Description	*Comments*
(18) Bed areas	
Each half of the ward unit has two 6-bed bays, one 2-bed bay and one single-bed room. At the time of the study, the single-bed rooms contained two beds. Beds in the multi-bed areas are at 8'0" centres. Curtain rails are 6'8" above floor level and are made of aluminium with plastic runners. The curtained area round each bed is approximately 8'0" square. Bedhead lights, which swivel laterally but not vertically, are placed well to one side of bed centres. Three levels of illumination are possible. There is a metal handset containing call bell, radio and light switches. Four types of bed are in use; one type is adjustable in height between 1'6" and 2'2" with an easy device for raising/ lowering the head or foot of the bed.	The bed spacing is good. Bed curtains are free-running and silent, but the type of plastic runner makes it impossible to pull the curtain further back than 3'0" from the partition wall. This precludes patients in adjacent beds from seeing each other and restricts observation from the nurses' station and also between the bed bays. Venetian blinds are used instead of cubicle curtains for the side of the beds nearest the windows. Bedhead lights are too far from bed centres to allow their effective use as examination lights. Originally these lights could be operated from a hand-set or from a chain attached to the fitting. The latter was, however, inaccessible to the patient in bed and was later removed. The metal handset is much too heavy. The bed with adjustable platform is particularly useful.
(19) 6-Bed bays	
These bays are 24'0" x 19'9". The ceiling of channel jointed boarding is 9'6" high in the bed areas. The adjacent corridor ceiling of acoustic tiles is 8'0" high.	Opinion is divided on the suitability of boarded ceiling. Daylight is restricted by an adjacent building on one side and trees on the other, and the level of natural lighting at the inner beds is slightly too low, but is relieved to some extent by the brighter top-lit central rooms.
There is a W.H.B. with an independent light in the ward corridor at either side of the ward unit. The partitions between the bed bays are glazed from 3'0" above floor level.	The wash hand basin is too small: a 22" wide basin would be more suitable than the 18" one fitted. The glazed partitions are effective in increasing observation except where this is obstructed by bed curtains. No adverse comment had been received from patients concerning the layout of beds.
(20) 2-Bed bay	
This bay is 11'3" x 16'0" in floor area.	Space is adequate for two beds.
(21) 1 Bed room	
This room is 11'3" x 16'0" in floor area.	Space is adequate for two beds and in fact an additional bed has been placed in this room although there is only bedhead lighting for one. Observation from corridor impaired by D.S.R. and W.C.
(22) Venetian Blinds	
Venetian blinds are provided at all external windows.	The adjusting rods have been found awkward in use.

Description	*Comments*
(23) Windows	
Top hung windows have been fitted. Above these there are pole operated glass louvres.	There is no fine adjustment and in opening the window this has been found unsatisfactory. The louvres are stable in use compared with hopper type windows.
(24) Floors	
The floors are mainly of sealed lino.	Satisfactory.
(25) Window boxes	
Internal window boxes have been fitted for the full length of all windows.	These window boxes are awkward to clean and are not being used.

Engineering services

72. The unit has a plenum heating system supplemented by a few hot water convectors. The ward has its own independent heating control, and comfort conditions appear to be satisfied without difficulty.

73. Control of the general ward lighting is from a single switch at the nurses' station but experience has shown that separate switching of the individual multi-bed bays is preferable.

74. Criticism was made of the bed-head light which is approximately 3 ft. off the bed centre. The unit is fitted with a pull switch which has proved troublesome and has been removed, leaving the control on a four-position dimming switch now considered satisfactory. Each bed is provided with a hand set containing a nurse call-push and radio control, but the unit - a heavy metal box approximately 3½" x 2½" x 1½" deep - is far too clumsy for use by elderly patients. The cable connection is unnecessarily large and carries an objectionable odour. A complete assembly lacks flexibility causing frequent breakages of the 12-pin adaptor and wall socket.

75. The illumination value in this ward is between 4 and 6 lumens per square foot only. The ceiling is timber which has low reflection qualities.

Pre-Convalescent Unit (Hunter Hospital, Kirkcaldy)

76. This hospital is centrally situated in Kirkcaldy and consists of 28 beds in a converted house set in most attractive grounds. Of the 28 beds, 16 are reserved for surgical patients from the Victoria Hospital. The other 12 beds are used for patients from the Orthopaedic Hospital. The beds are distributed on two floors:-

6-bed women's orthopaedic ward
6-bed men's orthopaedic ward

6-bed women's surgical ward
6-bed men's surgical ward
1 2-bed women's surgical ward
1 2-bed men's surgical ward.

77. The ward units are of the open type, simply furnished but generally attractive. The ancillary accommodation for each ward consists of:-

1 sluice room
1 bathroom with wash hand basin
1 W.C. compartment
1 linen room
1 cloakroom for patients' clothing.

78. The general accommodation consists of:-

1 preparation/medicine room adjacent to the matron's office
1 kitchen
1 laundry room (small items of linen and blankets are washed; all other linen is sent to a commercial laundry)
1 sewing room
Residential accommodation
Staff dining room.

79. The nursing staff consists of:-

(1) *Day duty*

Matron-resident (on call 24 hours)
Sister - resident
1 Staff Nurse - non resident - full time
1 Staff Nurse - non resident - part-time (9 a.m. - 4 p.m.)
1 Staff Nurse - non resident - part-time (6 p.m. - 10 p.m.)

(2) *Night duty*

1 Staff Nurse - 4 nights per week
1 State Enrolled Nurse - 3 nights per week
2 Auxiliary Nurses - sharing 7 nights per week.

80. The nursing staff is responsible for all the clerical work, telephone calls and for the ordering of stores and supplies. Some stores are ordered direct from the suppliers, but others, including syringes and sterile packs, are obtained from the Victoria Hospital. Instruments are, however, still boiled at ward level.

81. The hospital has no resident medical staff. A general practitioner visits the hospital daily and is on call for emergencies. He is responsible for the day-to-day treatment and for arranging the dismissal of patients. In addition, registrars from the two main hospitals visit the hospital twice a week, and consultants from both hospitals visit weekly.

82. As has been noted in an earlier section of the report, patients are transferred to the Hunter Hospital comparatively soon after operation. The Hunter Hospital is thus a more "acute" unit than might be expected of a pre-convalescent hospital; it is, in fact, classified as an "acute" unit in statistical returns. The number of admissions is between 70 and 80 each month, and the average duration of stay approximately nine days. It may be noted that the cost per patient per week is roughly £20 as against a cost of almost £32 at the Victoria Hospital.

83. In some respects at least a part of the Hunter Hospital can be regarded as an integral part of the Victoria Hospital unit. An indication of increasing pressure on both units is that the average duration of stay in the Victoria Hospital was 23 days in 1961, and has dropped to 15 days; and in the same way the average stay at the Hunter Hospital has dropped in the same period from 11 days to 9 days.

84. A detailed description of the rooms and areas in the hospital is not given in this report. It is converted accommodation and few lessons could be learned in relation to future planning. It may be noted, however, that while there is no separate day room -- easy chairs and T.V. sets being provided within the ward area - and although the location of the rooms is not ideal in facilitating nursing work, there is the impression of an efficient and well organised unit dealing with fairly ill patients and providing an acceptable service at an economical level.

Points relevant to future planning

85. In addition to comments made above, the following may be noted:-

(1) Functional brief

It is essential that planning assumptions affecting ward work are based on detailed discussion with representatives of those interests mainly concerned. After agreement, these assumptions should be carefully recorded.

(2) Commissioning

Every effort should be made to acquaint the staff bringing a new hospital into commission with the operational assumptions underlying the design. This commissioning procedure should embrace the co-ordinated ordering of equipment and supplies.

(3) Operation

The smooth operation of the ward unit depends upon frequent consultation and co-operation with the supply and administrative departments.

(4) Size of ward unit

Small wards, such as the 10-bed unit planned for dermatology, are uneconomic in staff and should be avoided.

(5) Ancillary rooms

Functions should be carefully analysed and the use of each room clearly defined in the brief. In particular, the need to use several rooms in the course of preparing for one procedure should be avoided.

(6) Sterilising

Sterilising in wards should be abolished.

(7) Doors

Side-hung doors in bed areas are space-occupying, awkward in use with treatment trolleys, and, when open, obstruct access to the bed behind. In these respects sliding doors have advantages. It is most important that doors are of adequate width for the passage and manoeuvering of beds and trolleys where this is required; there is a relationship between door width and corridor width in this respect.

(8) Observation of patients

Easy observation of patients is most important from the nursing point of view. In a four-bed ward, it is not sufficient only to have an observation panel in the door.

(9) Nurses' station and nurse call system

Nurses' stations should not be elaborate but must include a suitable writing top. Nurse call systems should include patients' bathrooms, W.Cs. and day spaces.

(10) Grouping of patients

The design should facilitate the grouping of patients according to their degree of illness and reliance on nursing attention

(11) Day space

Two types of day space appear to be required; one for patients who are freely ambulant, and another within the bed areas for those who can only be up for very short periods. Day spaces should be located where passing nurse supervision is possible, and be of an attractive, domestic character.

(12) Windows and blinds

Extensive glazing can lead to unpleasant conditions for both patients and staff even during the winter months. Venetian blinds can have many disadvantages. Size, weight, fixtures for proper cord action, freedom of movement against certain types of windows, difficulty in cleaning, and noise are points which must be considered.

(13) Oxygen and suction

The provision and location of these services must be carefully considered at the planning stage.

(14) Artificial lighting

It is important that the location and type of all light fittings is studied in relation to the patients and their requirements. Bed-head lights should have a projection to provide a better level of lighting over the bed area and be fitted with a dimming control. The switches for bed-head lights must be

easily accessible to relatively immobile patients. Night lights in corridors should be designed and positioned so as not to disturb patients in bed areas. Night lights at 1'10" from floor level in bed areas may be sufficient to guide staff about the room but are generally unsatisfactory, and a low intensity light at a higher level is preferred. Suitable switching arrangements in wards with multi-bed bays and open planning are important. The shape, style and weight of hand-sets should be carefully considered particularly for patients in geriatric wards. In relatively deep planned six-bed wards, wall and ceiling finishes with good reflection factors are desirable to achieve natural and artificial lighting standards.

(15) Patients' clothes lockers

Provided they do not impede observation of patients by nurses, the provision of individual clothes lockers within the bed areas has much to commend it.

(16) Bathrooms

One bathroom should suffice for a ward unit of 28-30 beds provided:-

(a) the bath is free-standing
(b) the floor area is sufficient to allow for the use of wheel chairs (80 sq. ft. minimum)
(c) there are also shower compartments either related to individual bed areas or centrally placed within the unit. These compartments should be a minimum of 15 sq. ft. and have adjacent drying and dressing facilities.

(17) W.C.s

If W.C. facilities are planned adjacent to and reserved for particular beds or groups of beds, this increases the possibility of flexible ward usage.

(18) Heating and ventilation

Local heat control by manually adjusted radiator is unlikely to be effectively undertaken in ward areas, especially if the response is slow. Internal toilets require mechanical ventilation.

(19) Washing facilities

Wash hand basins for use by more than one patient should be in separate self-contained compartments with a small shelf for toilet articles, a mirror, clothes hook, and nurse call system. The size of the door and of the compartment itself must be such as to accommodate a wheel chair.

IV - OUT-PATIENT DEPARTMENT

86. The main out-patient suite in Phase I is small but intensively used. There are approximately 800 out-patient attendances each week including 200 new patients. Out-patients are also seen at a separate chest clinic, at a suite designed exclusively for dermatology, at a "special" clinic - for V.D. - at the main operating theatre suite, and in a separate room equipped for ophthalmology.

Out-patient clinics

87. There is an appointments system and out-patient sessions normally last three hours. The programme at the end of the survey was as follows:-

	a.m.	p.m.
Monday	Medical	Medical
	Surgical	Surgical
	Urological	Varicose veins (starting 6.45 p.m.)
	Chest	Psychiatric (conducted in the "dermatology" suite)

	a.m.	p.m.
Tuesday	Medical	Paediatric
	E.N.T.	Radiotherapy
	Ophthalmology	Chest
		Obesity
		Minor Operations
Wednesday	Medical	Diabetic
	Surgical	Surgical
	Dental	Chest
		Speech Therapy (commencing 5 p.m.)
Thursday	Diabetic	Surgical
	Paediatric	Diabetic
	Ophthalmic	Chest
		E.N.T.
		Dermatology (once monthly)
		Psychiatric (in "dermatology" suite)
Friday	Medical	Medical
	Medical (anti-coagulant)	Gynaecological
	E.N.T.	Chest
	Paediatric	Rectal (commencing 7 p.m.)
Saturday	Dietetic	
	(Obesity)	
	(Every second Saturday)	

88. "Special" clinics - for V.D. - are accommodated in a separate building; four morning and three evening sessions are held.

89. In medicine and surgery, separate sessions are held for new and for return patients. The following is an indication of the average case-handling capacity of certain clinics. The numbers refer to a 3-hour session and a single consultant.

Medical:	6 - 9 new patients or 20 - 25 return patients
Surgical:	15 - 18 new patients or 30 - 35 return patients
Paediatric:	7 - 8 new patients or 14 - 15 return patients
Gynaecology:	8 new patients and 15 return patients
Chest:	4 new patients and 20 return patients
Ophthalmology:	10 new patients and 6 return patients or 6 new patients and 18 return patients

90. No teaching is undertaken at out-patient sessions.

Nurse staffing

91. The following is the normal complement of staff to cover the out-patient areas including one female V.D. clinic each week:-

3 Sisters
1 Full-time Staff Nurse
2 Part-time Staff Nurses
2 or 3 Student Nurses (the number of student nurses is variable)

Main out-patient department

92. The following is a description of the various rooms or areas with comments:-

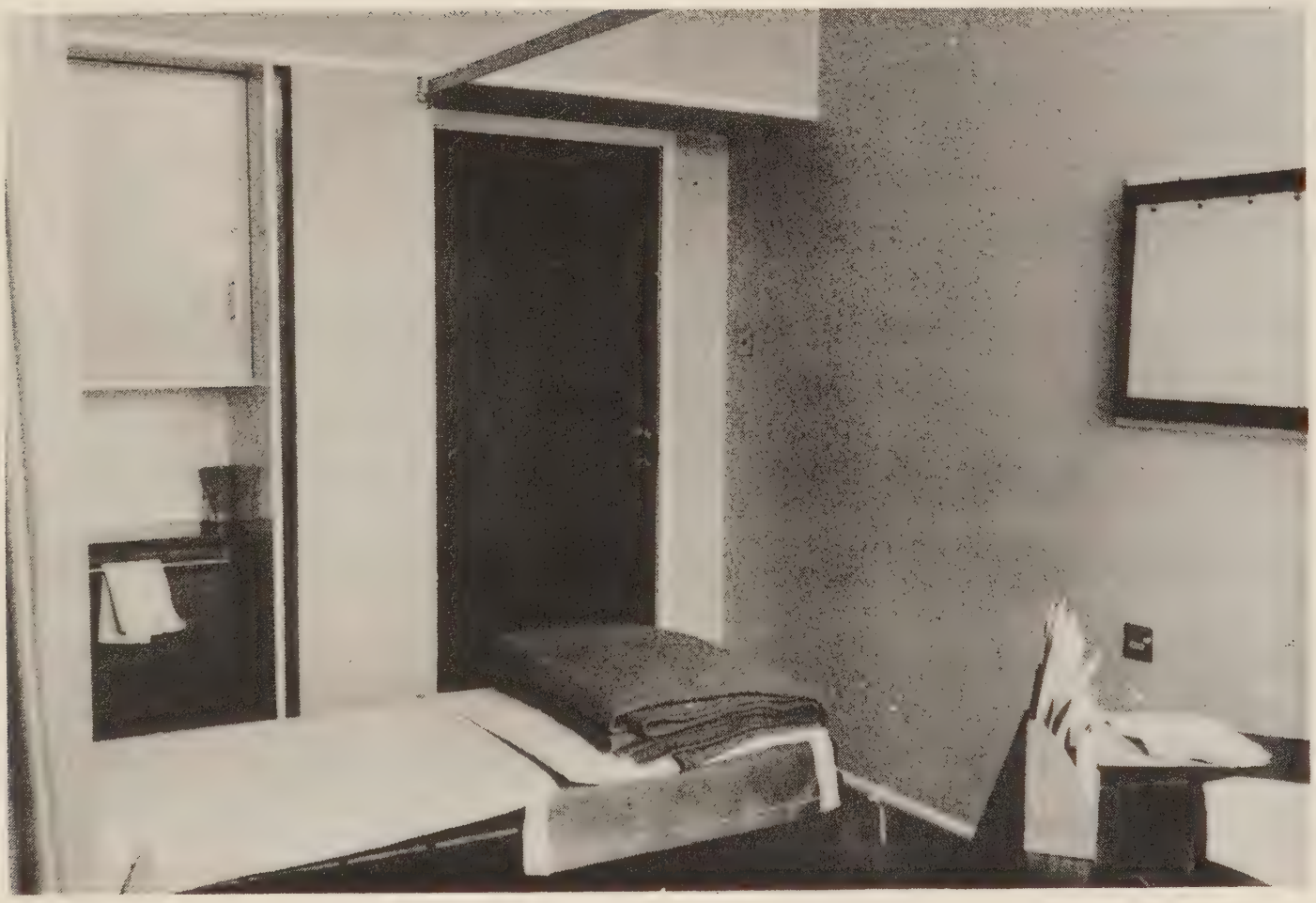
Description	*Comments*
(1) Entrance	
A 5'0" wide door with two plain glass panels leads to an entrance area 11'0" x 10'0". Two steps outside the entrance. Canopy 8'0" high projecting 4'6". Recessed mat. A plain glass panel.	The steps and recessed mat are awkward for wheeled transport. The relationship between the reception area and the main waiting space is unsuitable. From one sliding panel only a

36. View from reception desk, out-patient department

Description	*Comments*
completes the outer wall of the entrance area. Reception counter behind two sliding glass panels.	corner of the waiting area is visible (photo. 36); from the other no waiting patients can be seen. Signposting to the X-ray and physiotherapy units within the entrance area would reduce the number of enquiries at the reception desk.
(2) Staff rooms and W.Cs.	
There is a row of rooms each approximately 12'0" x 10'0" in floor area, for the records officer, staff changing, the almoner, and the out-patient sister. (See Appendix G). Apart from the sister's office, these rooms are not used exclusively by staff in the out-patient department. They present no unusual features in location, design or furnishing.	Neither the sister's office nor the almoner's office (now used by the dietician) are extensively used. A staff changing room of approximately 120 sq.ft. is insufficient. The dangerous drugs cupboard with stocks for use in the out-patient area is in the sister's office. Such preparations are infrequently required.
(3) H.M.C. (domestic service room)	
An L-shaped room with a total floor area of approximately 50 sq. ft. Sink and sluice sink, small cupboard, two shelves, brush and "hooks".	This room is slightly too small for the fittings and equipment it is required to contain and to provide adequate working space. An additional 10 sq. ft. would have been an advantage.
(4) W.C.s	
The accommodation for women consists of two W.C. compartments; for men, 1 W.C. with a double urinal. Each area has a terrazzo floor and a wash hand basin. The W.C. compartments have a floor area of 3'4" x 5'7" and have inward opening doors with a clear space of 2'1". Walls of compartments stop 2'3" short of the ceiling. Walls tiled to 6'10".	It would be preferable for W.C. compartment walls to extend to the ceiling, provided that each compartment is properly ventilated. The doors should open outwards. The effective door width should not be less than 2'6". The W.C.s depend on natural ventilation which means opening a high-level window measuring approximately 6' x 2'. This is rarely done.
(5) Waiting space	
An area approximately 260 sq. ft. containing 46 chairs, with the main corridor at the inner side and a floor to ceiling window along the outer wall. This space serves both consulting suites and the out-patient theatre/admission area. Floor of lino tiles (as for all corridors).	This space was said to become overcrowded at certain clinics. Congestion not observed during the period of the survey. The location is inconvenient in relation to the reception area; it is more convenient to the surgical than to the medical suite.

37. Waiting space

(6) Medical consulting suite



38. Consulting room

Description	*Comments*
Two consulting rooms each 12'6" x 10'2" with two rows of 3 cubicles between them (see Appendix G). Each cubicle is 3'1" x 2'0" in floor area, contains a chair, and has a wall mirror with two hooks. Front of cubicle curtained up to 6'6". One cubicle reserved for weighing infants. Each consulting room contains a desk and chair, an examination couch, two side chairs, wash hand basin (elbow taps), two telephones and dictation point. Wall-mounted sphygmomanometer, adjustable lamp, and X-ray viewing box. Curtain rail encloses an area 7'0" x 6'0" round examination couch. Windows the full length of the outer walls. Venetian blinds.	These changing cubicles are too small, and should be unnecessary. No security for patients' belongings. Consulting rooms too small. Should be 170-180 sq. ft. if used as a consulting and examination room. Although the curtained area round couch is 1' smaller both ways than is necessary, it is still obstructed by other furniture in the room. The bases of examination couches have fitted drawers. This is not a convenient position for use during consultations. The limited space is illustrated by the need to provide bumper bars behind consultants' chairs to avoid damage to the walls. Telephones undesirable in consulting rooms.
(7) Clinical test room	
This room has an overall area of 12'6" x 10'2". Inset and with terrazzo partition walls reaching to 2'2" from the ceiling are a W.C. compartment and a clinette. These are 5'0" x 3'0" in floor area with an inward opening door. Effective door space 2'1". There is a lab. bench 1'10" wide with a laminated plastic top. Staining sink and gas point. Bench centrifuge, bench incubator, free-standing incubator, wall shelves and cupboards.	Inset and partially walled W.C. units are unsatisfactory. The door of both W.C. and clinette should open outwards, and a clear width of 2'6" is preferable. The bench space is sufficient for the routine work undertaken in the types of clinic held.
(8) Electrocardiography room	
This room (of 12'6" x 10'2") contains an examination trolley, an E.C.G. machine on a mobile table, filing cabinets, and a small audiometer. A fitted developing tank (in a space of approximately 2'0" x 3'0" x 3'0" high). Door width 2'5". There is a table and dictation point used by a senior registrar for office purposes.	Excluding the element of office routine unrelated to electrocardiography, this room is of sufficient size for its function, the developing of tracings (if this method is employed), and the maintenance of card index records.
(9) Surgical suite	
There are two consulting rooms each 12'3" x 10'1" in floor area. Between the consulting rooms is a row of four open-ended cubicles each 5'0" x 8'6" with a curtain reaching to the ceiling (9'0"). The consulting rooms contain a normal range of furniture including consultant's desk and chair, two side chairs, wall-mounted X-ray viewing screen, mobile examination lamp, wash hand basin (elbow taps), two telephones, dictation point, and in one of the rooms an examination trolley and steps. The cubicles contain examination trolleys, a chair, a wall-mounted lamp, two coat hooks and a hinged shelf.	The consulting rooms are too small, even allowing for the fact that a large proportion of patients undress and are examined in the adjacent cubicles. The blinds have to be lowered whenever the room is in use to ensure privacy. The open-ended cubicles, even with acoustic treatment, do not give a high degree of privacy. For examination purposes an area of 5'0" x 8'6" is too small. Circulation space on either side of the examination trolley would be an advantage, and this would require a cubicle at least 6'0" wide. Telephones undesirable in consulting rooms.

Description	*Comments*
Partition walls have acoustic tiling. In the corridor space in front of the examination cubicles are a wash hand basin (elbow taps and mixer valve), a small table and a wall-mounted, hinged, writing top. The windows for consulting rooms and examination cubicles extend the whole width of the outer wall. Venetian blinds are fitted to the consulting rooms and obscured glass at the examination cubicles.	
(10) Forward reception point	
A bay in the circulation space of approximately 140 sq. ft. (10'0" x 14'0") used as a nurses' station, a parking place for trolleys, and an area where patients' case notes are assembled and where patients' heights and weights may be measured. There is a window along the 10'0" wall; a mobile screen ensures privacy from passers-by (Photo. 39).	This space has been developed as a nurses' station as a result of the dissociation between the reception point and the main waiting space. In this area nurses undertake duties with records and in the marshalling and ushering of patients which should fall to records or receptionist staff. The taking of patients' heights or weights in what is virtually a public corridor is unsatisfactory.

39. Forward reception point

(11) Tea pantry	
An internal room of approximately 85 sq. ft. with water boiler, sink and cupboards.	Well sited between main O.P.D. and waiting hall. Poorly ventilated.

Description	*Comments*
(12) Corridors	
The main corridor is 6'0" wide.	In view of the open waiting space, the width of corridor is just adequate.

Comment

93. Apart from the comments made above on the inadequacy of certain rooms, and recognising that this accommodation will be used for other than out-patient work when Phase 2 is completed, it is relevant to note the following points:-

(1) Reception and ushering

(a) The design does not facilitate the ready marshalling and control of patients, and these duties fall to the nursing staff once the patients have arrived at the main waiting area. The initial function at the reception desk is confined to directing the patients on their arrival to the areas at which they will be seen; these include the main out-patient department, subsidiary out-patient areas, the radio-diagnostic department or the physiotherapy unit. The receptionists do not check arrivals against any list, but, for outgoing patients, they arrange return appointments and arrange ambulance transport where necessary.

(b) The nursing staff collect case notes from the reception area, and it is their responsibility to detect arrivals in the waiting area; they do this by periodically collecting the appointment cards. These cards are checked against an appointment list which the nurses hold in their improvised duty areas. In due course, patients are called forward by a nurse to the appropriate clinic or undressing cubicle. For the medical clinics, the patients' records are held in the nursing bay, whereas, for the surgical clinic, the records appear to be held in that suite; this is because there is more space available there. While, as noted above, the main waiting area is so positioned that it is not visible (except for a few chairs) from the reception desk, neither is it easily observed from the nursing bay. This involves a considerable amount of unnecessary walking on the part of the nurses, particularly in relation to the medical suite.

(2) Consultation suites

The consultation rooms are intensively used, and each consultant has only one room. The examination cubicles in the surgical suite, while defective in certain respects, are less so than the undressing cubicles between the medical consulting rooms. These latter cubicles are much too small for their function. They involve the use of communal dressing gowns, and difficulty has been experienced with patients' belongings being stolen; an incident of this kind actually arose during one of our visits.

94. Operating theatre and admission area

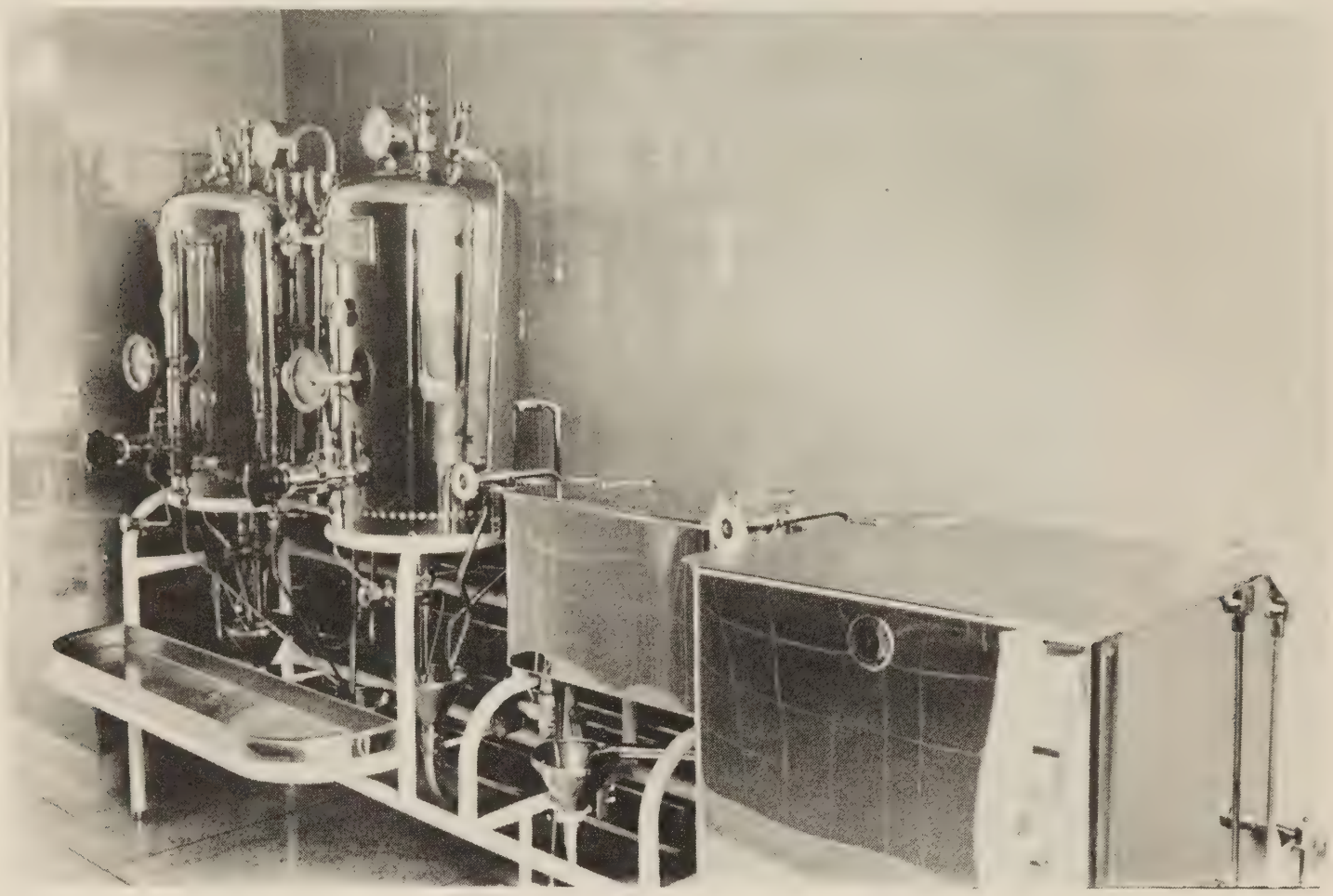
(1) Operating theatre

The theatre has a floor area of approximately 11'0" x 15'0". It has a terrazzo floor and tiled walls. Wall-mounted piped oxygen, nitrous oxide and suction, wash hand basin with elbow taps and mixer valve. Wall-mounted X-ray screen, operating table, large ceiling mounted lamp, anaesthetic trolley, glass-topped instrument trolley, stainless steel basin stand and kick bin. Heating in this theatre is provided by a fan-assisted steam convector with a room thermostat controlling the fan.	As it is not supported by full-scale changing accommodation, etc., this can be regarded as a major treatment room. It is adequate in size for the range of work undertaken (see below). Some of the equipment may be over-elaborate for a theatre of this kind, e.g., the lamp. With a suitable range of procedure packs, sterilisation of instruments should become unnecessary, and large hot/cold water sterilisers might well be replaced by sterile fluid in flasks. The heating arrangement is not entirely satisfactory due to the continuing convection effects from the heater battery after unit has been shut off.

40. Minor operating theatre

Description *Comments*

In a corridor approximately 8'0" x 5'6", between the "theatre" and the preparation/treatment room, there are hot and cold water sterilisers and an instrument and a bowl steriliser.



41. Sterilisers in corridor between theatre and prep./treatment room

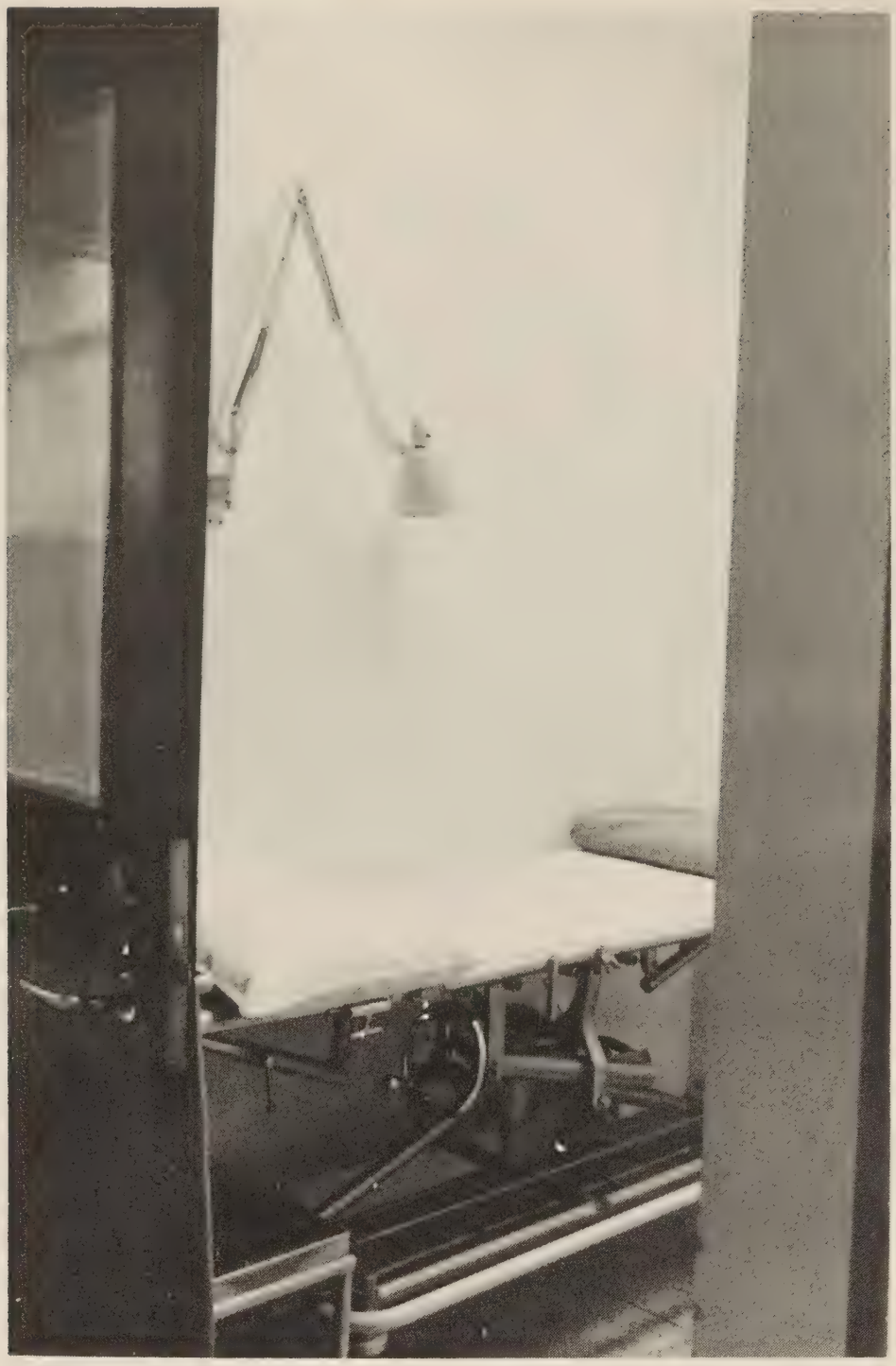
(2) Preparation/treatment room

This room is approximately 12'0" x 10'0" with an addition roughly 4 ft. sq. at the end of the "corridor" leading to the theatre. There are work tops on two walls, a sink, a row of four wall cupboards and drawers under the working tops. Wash hand basin with elbow tap and mixer valve, glass instrument cupboard, three mobile inspection lamps, wall-mounted X-ray screen, wooden steps (for table), two chairs, and two telephones. Illumination varies from 5 to 7 lumens/sq. ft.

The preparation/treatment/disposal area is of a multi-purpose type which is not altogether satisfactory. It is preferable for the separate functions to be individually accommodated. The light distribution is reasonably satisfactory but the surface-mounted, enclosed light fittings cut out the benefit of ceiling reflection, and the resulting general illumination standard is fairly poor.

42. Preparation/treatment room

Description	*Comments*
(3) Recovery rooms	
There are two recovery rooms each 10'0" x 8'0" in floor area, enclosed by curtains. Each contains a bed, a chair and a wash hand basin with elbow taps. There is a nurse call bell. No piped oxygen or suction.	These rooms are used both for the preparation of patients and for their recovery after procedures in "theatre". Areas are of sufficient size for patients requiring the use of a bed, but many of the patients attending for surgery are ambulant and the available accommodation can become overtaxed. The beds in these rooms are not placed as intended in the plan; this results in the nurse call system being inaccessible to the patient. Piped oxygen and suction would be an advantage.
(4) W.C.	
There is a W.C. having a floor area of 6'0" x 3'9"; an inward opening door with a clear space of 2'6".	An outward opening door is preferable in patient areas.
(5) Examination rooms	
There are two examination rooms each 7'0" x 5'3" enclosed by a curtain up to ceiling height. Each contains a trolley (couch), a chair, a ceiling light, and a wall-mounted adjustable lamp. Corridor outside the examination rooms is 4'0" wide and that opposite the recovery rooms is 5'6" wide.	The examination rooms (7'0" x 5'3") are too small; 8'0" x 6'0" would appear to be an absolute minimum. An internal room relying on borrowed and artificial light is not entirely satisfactory for the examination of new patients. The corridor widths are too narrow to allow the easy manoeuvering of trolleys.



43. Examination room

Description	*Comments*
(6) Linen store	
There is a small linen room approx. 12'0" x 7'0" located opposite the recovery bays.	

Comment

95. Operational defects were noted which accentuate difficulties inherent in the design of this suite.

Unexplained delays in starting a list of minor surgical operations, and the fact that all the patients on the list were called for the same time, led to a degree of congestion in both the recovery and the examination areas which was unnecessary. At the same time, minor operations are frequently of very short duration and only a limited period of recovery is necessary. Two "recovery" areas are insufficient under these circumstances, and the use of the examination rooms for out-patient work was observed to block them when required for patients arriving on trolleys prior to admission. Some data on patients seen as "casualties" and on the numbers of operations on out-patients is given at Appendix H.

Chest clinic

96. The accommodation designed for chest clinics is adjacent to the radiodiagnostic department. It is contained in an area of approximately 1,500 sq. ft.; it has a separate entrance and contains the following rooms:-

Description	*Comments*
(1) Waiting room	
A large room, 22'10" x 13'10". 14 chairs (stacking type), entrance door of 3'4" clear width, with plain glass panels. Lino tiled floor, 4 doors leading into other accommodation.	This room is larger than necessary for patients attending a chest clinic, an eye clinic or visiting the almoner's office – assuming a suitable appointment system in force and one doctor consulting.
(2) W.C.	
This opens off the waiting room. Area 8'0" x 4'6". Inward opening door (clear width 2'6"): terrazzo floor: 12'0" ceiling. No ventilation. W.C. brush and holder, pedal bin, wash hand basin (elbow taps).	Even with a high ceiling and greater cubic volume than normal, the ventilation is inadequate.
(3) Cubicle space	
Two doors, 3'5" clear width and obscured glass panels, lead from the waiting room to a space approximately 9'0" x 21'0" in which are 5 undressing cubicles. This area is fully enclosed; lit by ceiling light. Lino tiled floor. Cubicles 4'0" x 2'6" contain chair, mirror, 2 hooks and are enclosed by curtains.	Cubicles slightly too small. Usual lack of privacy and security associated with undressing cubicles.
(4) Consulting room	
This room is 21'8" x 11'8" and was designed as a treatment room. It is now used as a consulting room for chest clinics and for some eye clinics. It contains the usual range of consulting room furniture, plus a spirometer and reflected type eye testing equipment. Internal telephone. No connection to central dictating. Lino tiled floor.	This room, having been designed as a treatment room for a chest clinic, is larger than is necessary for a consulting room.
(5) Secretary's room	
This room is 12'5" x 14'6" and is used as an office and records room. Typing desk and chair, tables. Eight 4-drawer filing cabinets. There is a store some 12'6" x 6'0" opening off the secretary's office. 5-tier adjustable shelving, and one filing cabinet.	Larger than necessary for a secretary, but is used along with the store to house chest clinic records. The chest clinic X-ray records are gradually being incorporated in central storage space.
(6) Physician's room	
This room is 10'0" x 10'6" and is used as an office-cum-interview room. It contains a desk and chair, side chair, armchair, bookcase, two wall-mounted viewing screens and a desk viewer.	This room appears to be adequate as an office, interview and supplementary consulting room.

Description	*Comments*
(7) Store	
A small store opens off the circulation space in the cubicle area. Approximately 3'0" x 6'0" in floor area, shelved, and used as a stationery cupboard, and as a cloakroom for staff.	With the sizes of room in this suite and the other storage space available, this room appears to be redundant.
(8) Social welfare room	
This room is approximately 10'6" x 13'6" in floor area. It is used as an office and interview room by a health visitor (seconded from the County staff), and by a retired nursing superintendent, who does social welfare work in Kirkcaldy Burgh. It is also used as a supplementary consulting room if required. It contains two desks, chairs, examination couch, wash hand basin, recessed cupboards, electric steriliser, portable X-ray screen and a metal clothes locker.	The social welfare work based on this office comprises visits to patients' homes, to the wards and occasionally (not more than two or three times a week) patients are referred from the out-patient department. The volume of work undertaken does not appear to justify separate rooms or separate secretarial assistance. Reports are written in longhand.

Comment

97. This suite caters for five chest clinics per week with an approximate total of 200-250 attendances per month. In addition there are two morning sessions for ophthalmology when approximately 170 attendances are recorded per month.

98. While it is convenient to have the chest clinic in close relationship to the chest room of the radio-diagnostic department, and although this unit would form a suitable base for social service work, a separate unit of this kind would not be justified in planning a new out-patient department.

Dermatology unit

99. The out-patient department planned for dermatology is a separate unit with its own entrance remote from the main out-patient department. It is adjacent to the 10-bed ward described earlier in this report. It is contained in an overall area of approximately 3,300 sq. ft.

100. The accommodation, which is shown at Appendix I, consists of the following:-

Description	*Comments*
(1) Records office	
Located at out-patient entrance. Floor area 14'0" x 10'0". Sliding glass panel on corridor wall. Contains normal office furniture, metal clothes locker, and two 4-drawer filing cabinets.	Used as the sister's office.
(2) Waiting space	
Approximately 20'0" x 20'0". 24 chairs (Photo 44).	Probably double the necessary size even if this clinic was working to capacity - assuming an efficient appointments system.

44. Waiting space

Description	*Comments*
(3) Cubicled area	
The changing area, for men and for women, containing five cubicles back to back on either side, each 2'9" x 4'2", leads towards consulting room. Each cubicle has a chair, mirror, 2 coat hooks and is enclosed by a curtain. Between the undressing cubicles and the consulting room on either side is a further cubicle 4'4" x 4'10" containing two wash hand basins.	Superficially this might seem to be a suitable arrangement of undressing cubicles, but in practice it has many defects. Lack of privacy, lack of security, the need for patients who go from the consulting to the treatment rooms to return across the central corridor of the unit, and the use of communal dressing gowns.
(4) Consulting room	
This room is 10'0" x 16'0" in floor area and contains a large desk, chair, easy chair, two side chairs, and wash hand basin. There is an obscured glass window the full width of the room. Parquet floor and carpet.	This room is of sufficient size for consultation and the examination of ambulant patients.
(5) Examination/treatment room	
Communicates with consultant's room. Floor area 16'0" x 9'6". Contains examination couch, instrument cupboard, sink, desk and chair, two filing cabinets, obscured glass window, terrazzo floor, tiles on one wall. Hatch to sterilising room in adjacent Ward 7.	This room was intended for examinations and minor procedures, e.g., the taking of biopsy material. It is seldom used.
(6) Corridor	
The main corridor running through the department is 7'6" wide, and is covered with lino tiles.	Satisfactory.

Description	*Comments*
(7) Treatment area This area is across the corridor from the consulting suite. In an overall space of approximately 38'0" x 18'0", there are two treatment rooms separated by a preparation room. The preparation room is divided into two sections by a wooden partition; the section next to the main corridor contains a bath. The treatment rooms are 19'5" x 15'8" and 19'5" x 13'6" respectively. They have terrazzo floors and a range of working tops, fitted cupboards and drawers. Each treatment room has two foot baths, wash hand basin and sink. In one of the rooms are six large stainless steel containers for dressings, etc. There is a tiled sill some 2'0" wide along the window wall of all three rooms.	While a considerable number of dressings are done in these rooms, the potential of this treatment area is by no means fulfilled. Some of the equipment appears to be unnecessarily expensive, e.g., the stainless steel dressings drums. Solar heat gain from the windows running the full length of the outer wall can lead to uncomfortably hot conditions.
(8) Store There is a store near the entrance to the unit; area 10'6" x 4'0", fitted with wooden slatted shelves. Used for linen, dressings and stationery.	
(9) W.Cs. Two W.Cs. for patients and staff are available off the waiting area. Floor areas 4'0" x 5'0" with entrance area containing wash hand basin. Clear space at W.C. door 2'1". Opens inwards.	W.C. doors should be at least 2'6" wide and open outwards.

Staff

101. The staff consists of a sister on part-time work, one student nurse and one nursing auxiliary.

Work load

102. This out-patient unit is not used according to the planning assumptions. At the time of the survey, patients were having to wait up to two months to be seen by a consultant at Kirkcaldy; the alternative was to obtain an appointment at another hospital. At that time, a consultant dermatologist visited from Edinburgh once a month and saw about 16 patients at each visit. The unit is capable of a very much larger volume of work.

103. Between 450 and 550 attendances are recorded monthly, including patients attending for dressings. On two afternoons a week, the consulting room and waiting space are used for a psychiatric out-patient clinic.

Ophthalmic clinic

104. The room designed as a solarium for Ward 9 has been converted into a consulting room for a consultant ophthalmologist visiting from Edinburgh. This room is 17'0" x 10'0" in floor area and contains 4 chairs, 2 stools, a desk, an instrument cabinet, reflected type, slit lamp, test lenses, etc.

105. This room is only used twice per week. It appears to be suitable for its purpose except that it is on the second storey which is awkward for "eye" patients, and the fittings do not include a wash hand basin.

Endoscopy room - (In main operating theatre suite: para. 116(2))

106. Urological out-patients are referred to the operating theatre suite at 3 sessions a week when endoscopies are performed in a room designed for this purpose. The out-patient accommodation is reached by a separate entrance, and consists of a changing room with 3 cubicles, and a W.C. compartment. The total area of out-patient accommodation is approximately 10'0" x 15'0"; each cubicle is 2'9" x 4'0". (See para 117).

107. The accommodation provided appears to be suitable for this type of work.

Special clinic

108. V.D. clinics are conducted in a separate building. The accommodation consists of a waiting space, one consulting/examination room and two smaller examination rooms. There is a room used as a combined consulting room and laboratory; some undressing cubicles and W.C. facilities.

109. As this is adapted accommodation and will be put to a different use when the building of Phase 2 is completed, no detailed description or comment is given.

Points relevant to future planning

110. In addition to various comments made above, the following may be noted:-

(1) All consultative out-patient sessions should be held in the out-patient department and not at various parts of the hospital.

(2) The correct functional grouping of the entrance, reception and sub-waiting facilities, and the consulting rooms, is essential to good organisation and the best use of skilled staff.

(3) For the majority of clinics, a minimum of two adjacent and interconnecting consulting/examination rooms is necessary per consultant.

(4) If, as is recommended, undressing cubicles are not to be provided, it is important that consulting/examination rooms are of sufficient size to allow for basic furniture and an examination couch head on to the wall and capable of being screened. An area of 180 sq. ft. will probably be required for this type of room.

(5) The design of an out-patient unit should not necessitate patients having heights and weights taken in an open corridor.

(6) In relation to minor operative surgery on day patients, the number of "recovery" areas and their planning to ensure a suitable compromise between privacy and ease of supervision, are important.

(7) A steam convector is not so readily controllable as a low pressure hot water unit which would be more appropriate in an out-patient theatre.

(8) Where an even distribution of lighting is required over a complete room area, the design and choice of fitting must be carefully considered.

(9) Toilet ventilation depending on opening relatively inaccessible windows is too indefinite for public toilets, and a more permanent means of ventilation is necessary.

V - OPERATING THEATRE SUITE

Location

111. The operating theatre suite is located on the third floor and is conveniently placed in relation to the ward units it serves.

General layout

112. The theatre suite is a cul-de-sac unit with end access. There are two general theatres and a room for endoscopy, with a central group of changing rooms and a work room placed between the "dirty" corridor and the "clean" corridor, off which are the operating rooms. There is shared accommodation for sterilisation and disposal between the two main operating areas. The endoscopy room has its own sterilising facilities. A plan of the suite is given at Appendix J.

Staff

113. (1) *Day duty*

1 Superintendent

2 Sisters

3 Staff Nurses (full-time)

1 Staff Nurse (part-time)

4 Student Nurses

4 Male Orderlies

(2) *Night duty*

1 Sister

1 Staff Nurse

1 Male Orderly

Operating sessions

114. Routine operating sessions are held as follows:-

Monday	:	Gynaecology, urology.
Tuesday	:	General surgery, a.m. E.N.T. surgery, p.m.
Wednesday	:	General surgery, a.m. Out-patient surgery, p.m.
Thursday	:	Gynaecology, a.m. Eyes, p.m.
Friday	:	General surgery, a.m. Out-patients, e.g. endoscopy, p.m.
Saturday	:	General surgery, a.m.

During 1961 the average number of operations on the days in which the theatres were in use was 8.7; the largest number of operations on any one day was 26 (on two occasions); on 31 days, only one operation was performed and 19 of these patients had been admitted as emergencies.

115. The following table gives an indication of the volume of work undertaken and the way in which this has increased, particularly in regard to minor operations.

Table 2

Month	Total		Major Operations		Minor Operations		Emergency Operations	
	1961	1962	1961	1962	1961	1962	1961	1962
January	207	265	94	82	113	183	60	45
February	208	248	91	74	117	174	55	39
March	223	299	91	92	132	207	61	58
April	213	314	82	88	131	226	50	52
May	289	325	111	87	178	238	39	39
June	267	327	64	87	203	240	41	36
July	256	253	85	91	171	162	48	36
August	279	274	102	65	177	209	42	46
September	281	307	112	105	169	202	67	50
October	255	296	91	95	164	201	47	47
November	276	272	90	76	186	196	44	45
December	189	271	96	82	93	189	39	60
Total	2,943	3,451	1,109	1,024	1,834	2,427	593	553

It may be noted that, including Sundays, there were only 28 days during 1961 and 31 days during 1962 in which no operative work was recorded.

Accommodation

116. *(1) General operating theatres (2)*

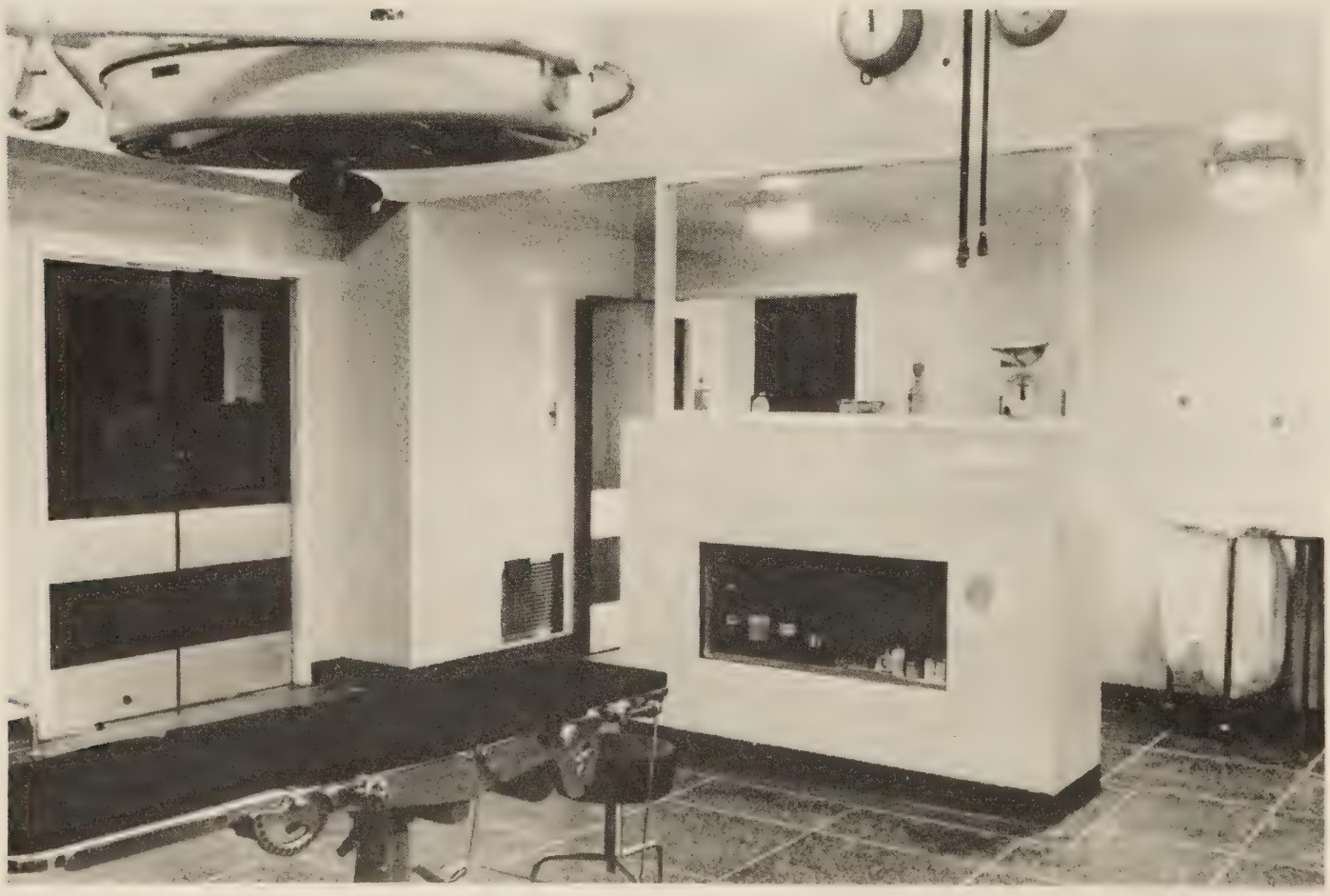
Description

There are two operating rooms each 17'0" x 25'0", plus two recesses of 9'0" x 1'6" at the door areas. The scrub-up space containing two sinks is included in this area, but separated from the main working space by a dwarf wall and a glass screen. The clear space in the scrub-up zone is 6'0" x 5'0" in area. The floor is terrazzo. There is a normal range of equipment and light fittings with outlets for piped hot and cold sterile water. There are two sets of ceiling leads for suction, oxygen and nitrous oxide. There is a window some 15'0" long and 3'0" from the floor. It is composed of double obscure glass with a 1'0" space between the panes in which is a blind operated by a handle on the theatre wall. There are ventilation inlets in the ceiling and four low level outlets. Two clocks are provided, one with a sweep hand.

Comments

These theatres are of ample size. Up to ten people were observed working in one theatre at the same time. The inclusion of the scrub-up area within the theatre may result in sterile parts of gowns or gloves being opened while an operation is in progress. The mirror image arrangement of the two theatres leads to some equipment being awkwardly placed for its function, e.g., the X-ray viewing screen is behind the operator in one theatre. Ventilation and temperature control are open to criticism. Heat can become excessive, and the location of air inlets may cause an unpleasant down draught.

45. Operating theatre showing scrub-up space



46. Operating theatre

Description	*Comments*
(2) Endoscopy room	
This room is 17'0" x 19'0" in floor area. It contains bowl and instrument sterilisers, two sinks, a ceiling mounted examination light, and a hot and cold water steriliser. There is one ceiling set of gas and suction pipes. There are two separate windows each 4'0" x 6'0" with double obscured panes of glass separated by a 1'0" space in which is a blind operated by a cord. There is a terrazzo window shelf about 2'0" wide. The floor is terrazzo. There is an electric hoist between this room and the X-ray dark room on the ground floor. A mobile X-ray machine is used.	Without the sterilising equipment, this room should be considerably smaller; 180 sq. ft. would suffice. The hoist to the X-ray dark room has proved useful, but access to its motor is exceedingly difficult for servicing.
(3) Anaesthetic rooms (2)	
Each anaesthetic room has a floor area of approximately 7'6" x 19'0". Patients are brought from the ward on trolleys by theatre porters, and, after being anaesthetised, are taken into the main theatre. Double doors, each with a clear space of 4'1", give access to this room from the "clean" corridor and to the operating area. There is a working top and fitted drawers (3'0" high and 7'6" long), a recessed cupboard with storage space and a central working top. There is a curtained space 2'8" x 7'0" near the door from the "clean" corridor. The floor is terrazzo and fittings include a sweep second hand clock.	Anaesthetic machines are wheeled between the anaesthetic room and the operating area; this appears to cause no inconvenience. The design of cupboard is suitable. The curtained area is used for the temporary holding of patients prior to anaesthetising. A width of 10' would be more suitable.
(4) Recovery room	
10'0" x 19'0" in floor area with a space some 2'0" x 4'6" taken up by a duct. There is a double door with a clear width of 4'1" between the "clean" corridor and the recovery room and a door with 2'4" clear width leading to the anaesthetic room. Piped suction, oxygen and nitrous oxide are provided, and wall-mounted sphygmomanometers for each of the two bed spaces. Two call bells are available. There is a cupboard 4'6" long, 1'8" deep by 3'0" high. Lino tiles on floor.	It has been found in practice that it would be advisable for the warning light which shows in the anaesthetic room and theatre, to be supplemented by an audible signal, e.g. a buzzer.

Description

Comments

(5) Disposal room

This is a long narrow room, 17'0" x 6'0", connecting the two main operating theatres. (Photo. 47). It has doors at either end. It is separated from the sterilising room by a bank of autoclaves, but connected to it by a hatch under which is a chute for dirty linen. Access to the autoclaves for servicing is from this room. The ceiling is 8'6" from the floor. There are two sinks and a hopper sink.

This room is badly located at the back of the theatre suite and is too narrow for clearing trolleys from both theatres. Dirty equipment has to be taken through the theatres and along the "clean" corridor to be removed from the suite. There is a tendency for the linen chute to be left open, and also for the disposal room to be used as a traffic route between the two theatres. No separate staff is allocated to this room and one nurse may therefore spend part of her time here, part in the sterilising room and part in the theatre.

47. Disposal room

Description	*Comments*
(6) Sterilising room	
This room is 15'0" x 9'0" in floor area and has a ceiling height of 8'6". It is connected to each of the general operating theatres by a door, and a double door with a clear width of 4'1" leads to the "clean" corridor. On the corridor wall there are glass-fronted instrument cupboards 1'0" deep. There are four autoclaves - two for bowls and two for instruments. Two are of 14" diameter by 24" long and two are of 18" diameter by 30" long.	This room is sufficiently large to serve two theatres. The timing of the sterilising cycle is satisfactory and there is no delay in the supply of instruments. Communication by hatch between the sterilising and the disposal rooms is unsatisfactory as there is a danger of sterile trolleys being prepared in this room with the hatch open. This room tends to form a traffic route between the two theatres. Heat build-up is considerable.
(7) Surgeons' changing room	
This room is 10'0" x 21'0" in floor area including a W.C. compartment and a shower. There are 8 lockers, and the furniture consists of easy chairs, a small table and boot racks. The room is used by 6 or 7 surgeons or anaesthetists.	This changing room appears to be adequate in size for the number of people using it.
(8) Nurses' changing room	
This room is 9'0" x 9'10" in floor area and adjacent to it a W.C. and shower is provided in a space 9'0" x 5'0". There are 4 lockers and 14 wall pegs. Female house officers also change in this room, and it is used as a coffee room during operating sessions. The floor is P.V.C. tiles.	This room is much too small for its purpose, and there are insufficient lockers.
(9) Orderlies' changing room	
This is a small internal room 5'0" x 9'6" with a W.C. compartment of 3'0" x 5'0". There is a wash hand basin in the room. The floor is quarry tiled.	This room is too small, and no shower provision has been made.
(10) Sisters' office and changing room	
This office is some 8'6" x 9'0" in floor area and off it is a small changing room with a W.C. and shower. The changing room is 6'10" x 3'3" and the shower compartment 2'1" x 2'4". The position of this office near the entrance to the suite is good but the available space is encroached upon by 3 inward opening doors.	The changing space and W.C. area is too cramped. It would have been better to include the changing accommodation within the main changing area of the suite.

Description	*Comments*
(11) Preparation/supplies room	
This room is located between the doctors' and nurses' changing areas. It is 9'0" x 12'0" in free floor space, and cupboards extend the whole width of the room. There are two double doors, one leading from the "dirty" corridor and the other into the "clean" corridor.	This room appears to be adequate for its purpose, but it may be noted that two linen cupboards are also provided in the "clean" corridor.

117. In addition to the accommodation listed above, there is an out-patients' changing room, including a W.C. and three changing cubicles (each 4'0" x 2'9" and enclosed by a curtain). The changing accommodation is mainly used in relation to the endoscopy theatre. There are also stores of approximately 90 sq. ft. at either end of the "dirty" corridor and a domestic service room-cum-pantry of approximately 70 sq. ft. near the entrance to the suite. The accommodation appears to be satisfactory for these functions.

Corridors

118. The entrance corridor is 8'0" wide, the "dirty" corridor 7'0" wide, and the "clean" corridor 6'6" wide for the greater part of its length but only 5'6" wide for the length of 20'0" opposite the work room. The "clean" corridor floor is of terrazzo, and the "dirty" one is lino tiled.

Emergency lighting

119. An emergency battery-operated lighting system is available in the suite and would come into action automatically in the event of a break-down. No emergency power is available. An electrical failure cuts out the heating throughout the hospital.

Ventilation

120. Filtered air is automatically maintained at a temperature which is set by the theatre sister within the range 60° - 80° Fahrenheit with automatically controlled humidity. The plant is in the basement. It was noted that the balance of input and extract depends to a large extent on correct usage, and is considerably upset if doors are left open. The intake for air is at first floor level. No cooling is available, and the avoidance of excessive build-up of heat depends on the system of air changing remaining efficient. This in turn depends on the efficiency of the filter system, which is checked daily. There are three levels of filtration, and filters are changed at regular intervals depending on velometer readings which are taken regularly by the engineering staff. It has been suggested that the oiliness in the air from the linoleum factories puts a particular load on the air filters; the building operations for Phase 2 contribute an additional temporary load.

Comment

121. (1) *Traffic routes*

It was considered that the entrance to the theatre suite might have been better placed opposite the "dirty" rather than the "clean" corridor. Several faults were apparent in the circulation of "clean" and "dirty" materials, and these arose mainly from the fact that the disposal room is placed between the two general theatres. While linen is disposed of directly by chute, other used articles have to be brought back through the operating areas and along the "clean" corridor to be removed from the suite. Again, used items from the anaesthetic rooms have to be brought through the operating theatre to the disposal room prior to re-processing in the sterilising room. The endoscopy room has its own sterilising facilities within the room but shares disposal arrangements with the general theatres, thus creating further difficulty in traffic flow. The circulation of patients and staff is relatively simple though the trolleys used for patients rotate between the "dirty" and "clean" corridors.

(2) Sterilising

Dressings, linen, gowns, gloves and syringes are obtained from the central sterile supply department. Only instruments and bowls are sterilised at theatre level. The autoclaves are single-ended and are fed from the sterilising room. Hot and cold water electric sterilisers are fitted in each theatre. They have self-sterilising taps, and, while they have been found generally satisfactory, the question of using flasks has been raised and is under investigation. The water sterilisers now in use do not create much heat in the unit; they are normally prepared at night.

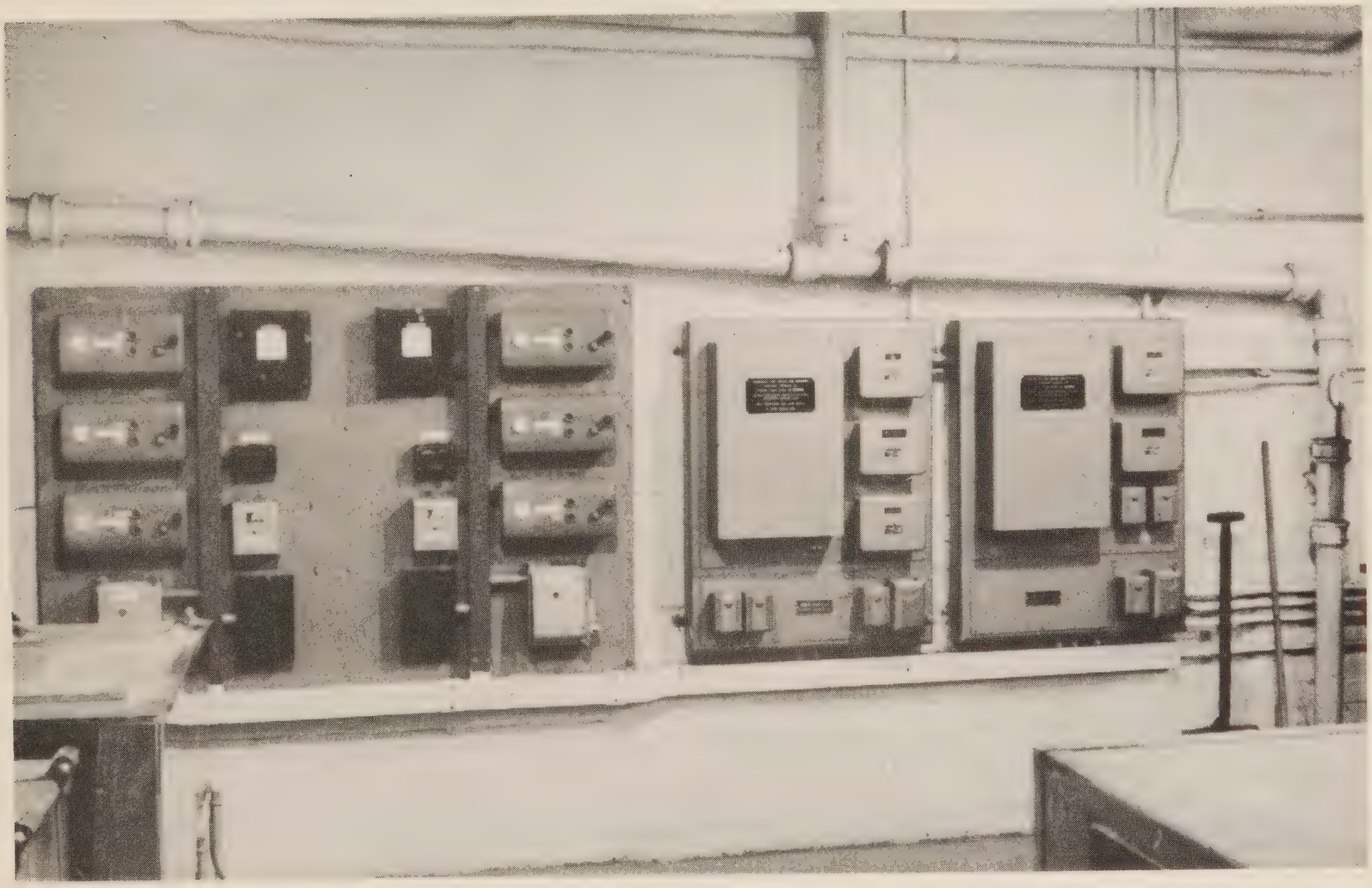
(3) Windows

It was reported that the windows were not fully satisfactory. They were too large and the resulting glare required the use of blinds in sunny weather particularly in the morning. The windows in the disposal and anaesthetic rooms had also been found liable to blow in. The space between the double panes was very difficult to clean.

(4) Engineering Services

(a) Each theatre suite has an independent input and extract ventilation system providing fifteen air changes per hour with selective control of temperature and humidity in the theatre. Satisfactory conditions are obtainable. There has been a criticism of the discharge into the theatre through the ceiling grilles which cause draughts at certain positions. The theatre suite has windows on the south elevation but solar gain here is minimised by a blind inside double glazing. There is no similar protection for the disposal areas, hence the combination of solar gain and heat emission from the equipment tends to make conditions in this room most uncomfortable. (See also para. 120)

(b) A separate plant serves the theatre sister's office, preparation and staff changing rooms, and, despite a balanced system, conditions in these internal rooms are not satisfactory.



48. Main switchboard in theatre plant chamber

(c) There is great difficulty in attending to the sterilisers, both for regular maintenance and emergency attention, because the only access is through the theatres.

(d) The main theatre plant chamber is situated in the basement, and the plant serving the rooms within the core is located in the staff residents' floor below. The installations are entirely satisfactory but a main electrical control panel in the plant chamber is poorly positioned, being located below a soil pipe.

Points relevant to future planning

122. While some comments on points of detail are given above, it is considered likely that in future more stress will be laid on features such as distinction of traffic routes, the avoidance of shared preparation and disposal rooms, accommodation for the reception of patients during post-anaesthetic recovery, an improved standard of staff changing accommodation, and the removal of sterilising facilities from the immediate vicinity of the operating area.

VI - PHYSIOTHERAPY DEPARTMENT

Location and staffing

123. This is a small department at ground floor level designed to serve the five new wards and out-patients. It is adjacent to the radio-diagnostic department and some 40 yards from the main out-patient entrance. The whole unit is contained in an area of just over 1,000 sq. ft. There is an establishment of one physiotherapist and two assistant physiotherapists, but the posts for assistants were vacant during the survey.

Work load

124. The physiotherapist undertakes ward work in the morning and out-patient treatment in the afternoon. Some 18-20 new out-patients are seen each month. There were 2,742 ward treatments in 1961 and a total of 212 out-patients with attendances (or re-attendances).

125. The absence of orthopaedic work in Phase I of this hospital has limited the amount of physiotherapy required, and no hydro-therapy is undertaken. Pre- and post-operative breathing exercises are the main activity in the ward units.

Accommodation

126. The accommodation consists of:-

(1) Office

The floor area of this office is 11'10" x 7'3". It is of sufficient size for a single physiotherapist but would be insufficient if three officers were sharing it on a regular basis. The physiotherapist maintains her own records and makes her own appointments. This room was originally planned as a treatment room.

(2) Waiting space

For this purpose a space outside the physiotherapists' office is used; it can take 6 or 8 stacking chairs and was said to be sufficient for present needs.

(3) Undressing cubicles

There are 4 cubicles, each 3'3" wide and 5'0" deep, with the back wall of obscured glass which does not give complete privacy from the main corridor leading to the radiodiagnostic department. The cubicles are curtained and open at the top. They are not immediately adjacent to the treatment rooms but are situated across a corridor.

(4) Treatment rooms

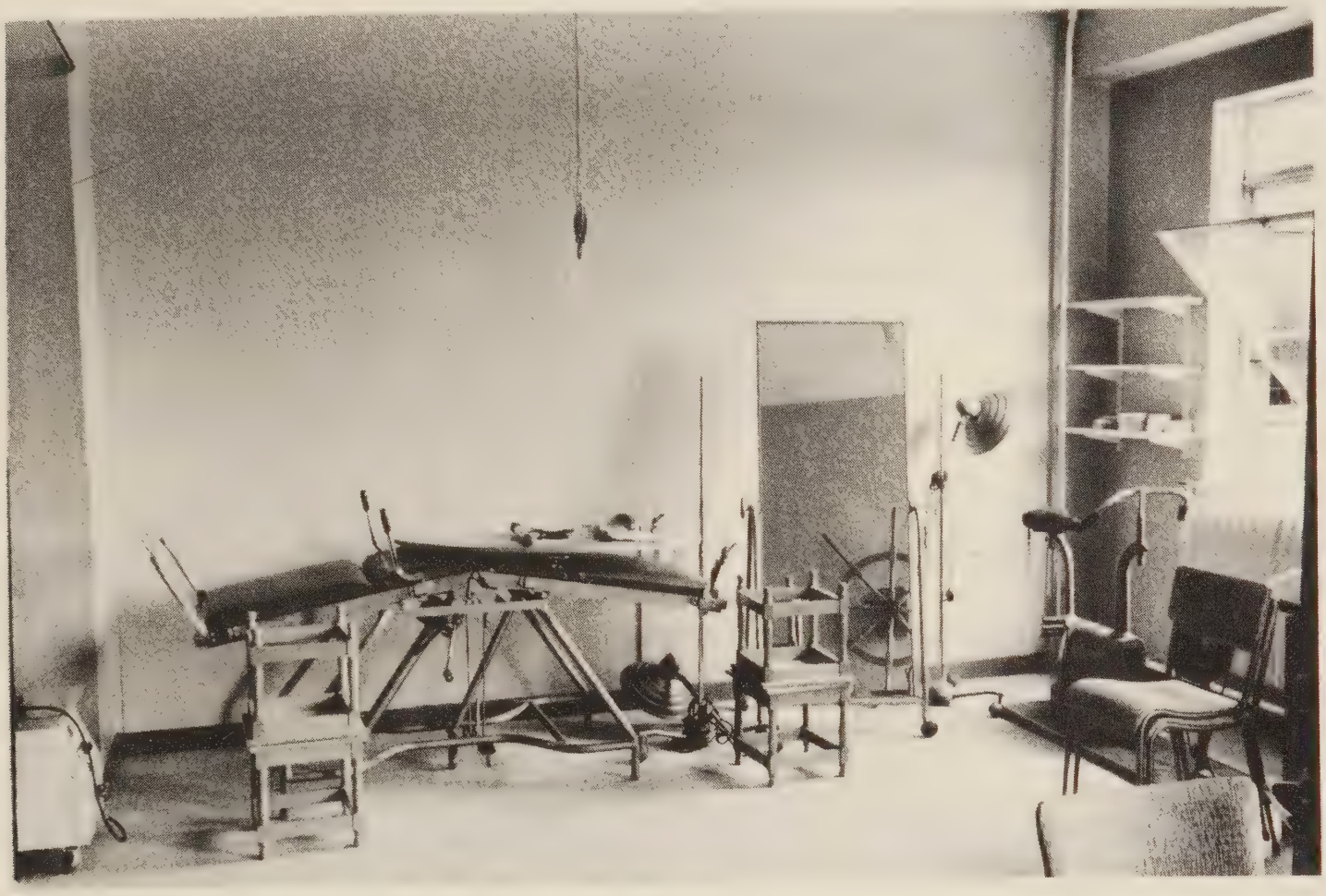
Two treatment rooms are available. One, 13'4" x 9'3", is mainly used for diathermy, and the other, 11'0" x 9'3", for heat treatments. Only one patient at a time can be treated in either room.

(5) Store

Adjacent to the undressing cubicles is a store 4'10" x 7'9". It has 4 slatted shelves and is sufficient in size for this department.

(6) Exercise room

The floor area of this room is 17'4" x 18'10". It is too small for general class work and none is attempted except for a small group of asthmatic children. There is a wide range of standard equipment. There are, for example, a walking frame, wall bars, traction apparatus, a fixed bicycle, treatment tables, a theraplinth (used mainly for postural drainage), a foot bath, wax bath and was' hand basin. Some equipment is little used in the absence of orthopaedic work.



49. Exercise room

(7) Floors

Floor coverings are of lino tiles and have been found satisfactory.

(8) Windows

Difficulty has been experienced with the side hung windows which are inclined to blow out in windy weather.

Comment

127. This is a small unit which, while providing suitable facilities for the present work-load, would be considerably overtaxed if the full complement of three physiotherapists was available.

VII - RADIODIAGNOSTIC DEPARTMENT

Introduction

128. A special study was made of the X-ray department. A method of following each patient's progress was chosen as the means of collecting data.

129. The number of points to be made concerning the design and layout of the department is limited; but the method of survey, involving the presence of observers in the department for long periods, was valuable in bringing shortcomings to notice. Comments of this nature are given in paragraphs 132 to 135, along with a description of the department. An analysis of the data derived from the study is contained at Appendix M. This may be of interest, not only for this hospital, but in the planning and organisation of X-ray departments for other district general hospitals. It may usefully be read along with the Nuffield Report on the organisation of hospital departments* which in a limited way it does something to complement.

130 The survey was made on five different week days, spread over a seven-week period, so as to give an approximate picture of the work of the department over a typical five-day week. The periods outside working hours (9 a.m. to 5 p.m.) were not covered; but otherwise data was collected for all patients attending the department and, in particular, their movements around the department were recorded and timed. This was done on a card (Appendix K) handed to the patient; times were recorded by the study team stationed at reception and waiting areas, and, within the X-ray rooms, by the radiographers to whom thanks are due for their help and co-operation. In addition to the information recorded on the cards, a list was kept by the staff of times of development of films; and information as to appointments was derived from records.

Description of department

131. The X-ray department, which has an overall area of approximately 6,500 sq. ft., is 'L' shaped. It is situated at one end of the main ground floor corridor, and access to it is either from the out-patient department entrance or from the main entrance hall. There is a separate chest clinic of approximately 1,500 sq. ft. adjacent to the X-ray department but with its own entrance. This department will be modified in some respects when linked to the new accommodation in Phase 2.

132. The department undertakes X-ray examinations for in-patients and out-patients of the Victoria Hospital, of other hospitals in the group, and some examinations for general practitioners. Approximately 1,300 examinations are made and 3,700 films taken per month.

Staff

133. The staff based on this unit consists of:-

2 Consultant radiologists
1 Registrar
Superintendent radiographer
3 Senior radiographers
6 Junior radiographers

The radiographers undertake work in rotation at other units in the hospital group.

Accommodation

134. The accommodation consists of:-

Reception and records office
Film store
2 Waiting areas
3 X-ray rooms - each served by 4 changing cubicles

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*Towards a Clearer View: The Organisation of Diagnostic X-Ray Departments: Nuffield Provincial Hospitals Trust: O.U.P., 1962, 7/6d.

Barium preparation room and 2 W.Cs.
Dark room
Wet viewing rooms
Staff common room
Consultants' room and W.C.
2 W.C.s for staff and patients.
1 Chest X-ray room - with 7 changing cubicles. (For relationship to Chest Clinic see para. 96).

The layout of the department is shown in Appendix L.

(1) Reception and records office

This office of 150 sq. ft. adjoins the corridor at the entrance to the department. It is equipped with a reception counter, typists' desk, filing cabinets and inter-com. The index cards. together with film reports, are filed in this office and it is proposed to retain these as permanent records.

(2) Film store

All films are at present filed in the records store using the terminal digit system of filing. It is proposed to retain all "positive" films for six years and to destroy all "negative" films at the end of one year. The records store of 260 sq. ft. is adequate for the present load of films. No filing clerk is employed and films are handled by both the staff of the central records office and the staff of the X-ray department.

(3) Waiting areas

The waiting area at the reception office is merely part of the general circulation space and is inadequate as initial waiting accommodation for more than two people. As a result, the central waiting area is used both before and after examinations. This leads to constant checking of patients in this area to ensure that no-one is overlooked. No separate waiting area is provided for patients on trolleys or chairs, who were occasionally observed waiting for long periods in the corridor.

50. Central waiting area

(4) X-ray rooms

There are three large, multi-purpose rooms, two of which are approximately 435 sq. ft. and one 390 sq. ft. in floor area including the control panels. Two of the rooms contain more than one machine, and this tends to lead to "blocking" of these rooms when long examinations are being carried out. The large windows have low sills and occupy almost one complete wall in each room. They have had to be fitted with special blinds for screening purposes and for protection. Each room is served by four changing cubicles, each of which is 3'6" x 4'0" in floor area. The doors of the rooms and of the cubicles are of a heavy, lead cored type and have caused considerable damage to floors and walls. Frequent checking of cubicle occupancy, by opening the door, is essential to ensure that patients have not been overlooked or to see if the cubicle is vacant. The fourth X-ray room of 396 sq. ft. is off the corridor between the reception office and the chest clinic. It is used for X-ray examination of patients from the wards, the out-patient department and the chest clinic. It is served by 7 changing cubicles, each 14 sq. ft., in an adjacent room. The main electrical control gear used in connection with the X-ray equipment is positioned by the door at the entrance to each room, and, in practically every case, is an assembly of iron clad industrial switches with little or no attempt made to group or house the units in a more functionally convenient and presentable manner. As in the out-patient department, fan-assisted steam convectors are used. A room thermostat controls the fan action, and a second thermostat, in an extract duct, controls the heater battery. The rooms tend to be overheated due to the continuing convection currents from the units.

(5) Barium preparation room and store

This is a compact, well-equipped room of approximately 30 sq. ft. adjacent to one of the X-ray rooms. The adjoining W.Cs., having floor areas of 6'0" x 3'0" with inward opening doors, are too small to permit any assistance to patients by staff. 25 sq. ft. with an outward opening door is necessary. No suitable room is available for patients who require to remain on a couch or trolley for the completion of the examination, and such patients require to remain either in the X-ray room or at the end of the main corridor of the department where the only form of privacy that can be provided is a mobile screen.

(6) Dark room

This room of 16'0" x 20'0" serves all four X-ray rooms and communicates with the endoscopy theatre by a hoist. It is in direct communication with two of the X-ray rooms and the wet viewing area. Casettes have to be taken across the corridor from the other two X-ray rooms. The dark room appears to be adequate in size for its present load and functions.

(7) Wet viewing area

51. Wet viewing area

This is an alcove of 16'0" x 10'0" off the main corridor and directly opposite the main waiting area. It is conveniently sited in relation to the X-ray rooms and appears to be satisfactory for its present function though it may be too small when an automatic processing machine is installed.

(8) Film viewing rooms (2)

These rooms of about 10'0" x 17'0" are used for viewing and reporting on dry films. They are larger than necessary for reporting by a single person.

(9) Staff common room

This room of approximately 145 sq. ft. is situated at the entrance to the department. It is of sufficient size as only a proportion of the staff use it at one time.

(10) Consultants' room

In an area of 210 sq. ft. there is an office used for viewing, reporting, dictating and interviewing by the consultant. This accommodation is ample for these functions. There is an adjacent cloakroom and W.C.

(11) W.Cs.

While only two W.Cs. are provided in the department for use by both patients and staff, this number appears to be adequate. They are, however, located on an inside wall, and ventilation, which was unsatisfactory, has been improved by raising the top dome-light on the flat roof.

(12) Staff changing accommodation

Clothes lockers have been placed in a narrow alcove of some 50 sq. ft. adjacent to the chest X-ray room. This restricted space is used by all the radiographers and the clerical staff for changing. This improvisation is unsatisfactory.

Points relevant to future planning

135. *(1) Waiting areas*

Waiting areas should not be so located that comments made by staff during the viewing of films can be overheard by patients. Provision should be made for patients who require to remain on a couch or a trolley for the completion of their examination. The central waiting area for the department should be closely related to the reception office; forward waiting space should be convenient to the X-ray rooms.

(2) Staff communication

The inter-communication system has proved satisfactory, and would seem to be a useful facility in an X-ray department.

(3) Changing cubicles

It is important that patients' changing cubicles are well lit and ventilated and of adequate size. Even with curtains, a floor area of less than 12 sq. ft. is inadequate. It appears that, in a busy unit, 4 changing cubicles are required in relation to each X-ray room.

(4) Ventilation

Radiodiagnostic departments have particular requirements for ventilation because of the need for black-out conditions and for protection of windows.

(5) Staff changing accommodation

Changing accommodation for staff should be provided centrally.

(6) Disposal area

A disposal room or area should be provided for, e.g., used linen, empty packages.

(7) Doors

If heavy doors are required for protection purposes, the structure of the door frame should be such that it will adequately support the weight of the door. Otherwise, the doors are both difficult to use and cause serious damage to the floor coverings.

136. Details of a survey carried out in this department are contained at Appendix M.

VIII - CENTRAL STERILE SUPPLY DEPARTMENT

Introduction

137. The C.S.S.D. in Phase 1 occupies a suite of rooms on one side of the ground floor corridor. Staff lavatories, a stores delivery entrance and the pharmacy are on the other side of the corridor which leads past the administrative offices to the main entrance hall, lifts and staircase. Phase 2 provides for a C.S.S.D. in the basement and the present accommodation will ultimately form part of the pharmacy.

138. Starting as a syringe service, the C.S.S.D. developed during the period of the survey, and over 3,000 packs are prepared per week. The external wall is set inside the structural frame, and the department is only 12'5" wide. It is 75'6" long, giving a gross area of 930 sq. ft. less built in autoclaves, etc. The C.S.S.D. as a whole impresses with its orderly appearance in restricted quarters. Effective use is made of adjustable shelving and simple methods ensure that packs are issued in date order.

Staff

139. The superintendent in charge of the unit is a nurse who has made a considerable study of central sterile supply departments. Her staff consists of one staff nurse (part-time), five nursing auxiliaries and one male orderly, all of whom have been locally trained in the work of a C.S.S.D.

140. Staff lockers and lavatories are outside the department. There is a wash hand basin and paper towel dispenser in the preparation area next to the glove container. The superintendent's "office" consists of a writing table in one corner of the preparation area.

Organisation

141. The Unit serves Kirkcaldy Victoria Hospital, the Hunter Hospital for drums only (28 beds), and the Adamson Cottage Hospital, Cupar, (25 beds)*.

142. At first the work of the department was conditioned by the fact that items being sterilised remained on charge to the "customers" and not to the C.S.S.D. This involved a considerable amount of checking and recording, much waste of time on the part of nurses bringing items for sterilisation, and made it difficult for the department to plan its production in advance. During the period of the survey the service to the wards was reorganised, and instruments, for example, are now on charge to, and supplied from, the C.S.S.D. This requires additional instruments "in the pipeline" but has resulted in a satisfactory service with a simplification of the work of the ward staff. It should be noted that the physical reorganisation of the sterile supply service is not restricted to the C.S.S.D. itself but extends to the user departments - e.g., the wards have been equipped with simple dispensers which are topped up with sterile packs thus eliminating much tedious checking.

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*Since the survey, the service has been extended to additional hospitals in the Group.

143. The department runs a seven day service and delivers twice daily. Items received as late as 3.30 p.m. can be sterilised and returned on the same day. The range of work includes 40 types of pack, gloves, instruments, etc. Some special syringes and needles are processed; most syringes are obtained from a commercial source. They are replaced at wards and departments daily on a 1 for 1 basis and returned to the suppliers via the C.S.S.D. weekly. Disposable syringes are not used, but disposable needles - especially sizes 1, 15 and 17 - are supplied.

144. Before reorganisation, items for processing were brought to a hatch with a bell push in the corridor. Large items were brought through an adjacent door. Here they were recorded and taken through the packing room to the other end of the unit to start their progress from the washing room through the sequence of operations. Nurses collected sterile items from the sterile store through a second hatch to the corridor. Sterile supplies were distributed by the orderly taking a trolley round the hospital twice daily. He had to wheel the loaded trolley back from the sterile supply store past the autoclaves to the door next to the receiving hatch.

145. Since reorganisation, the orderly visits the wards once daily, tops up dispensers and takes orders for other items such as instruments, tubes, jugs, bowls, etc. All supplies are recorded.

Accommodation

146. The department is housed in a continuous suite of rooms without dividing doors. It is 75'6" long and widths vary up to 12'5". The whole area (although facing north) is excessively warm and even in winter the radiators, which are free-standing and reduce bench space, are turned off. The horizontally pivoted windows do not offer adequate control of ventilation. The window wall is recessed some 4'6" under the upper floors, and light from the seven overshadowed windows is supplemented by tungsten light fittings. Within the limits of the accommodation, the department is well organised for the sequence of operations - except for the backtracking when items are received.

147. The accommodation is described in sequence:

(1) Wash room

This is lined with a plastic covered worktop with cupboards under and shelves above. There are three stainless steel sinks. As syringes are not now processed here, two of these are covered and not in use. A pipe duct has been pressed into service to provide additional storage for boxes of syringe containers. A door leads to the corridor. A wide opening leads to the packing room.

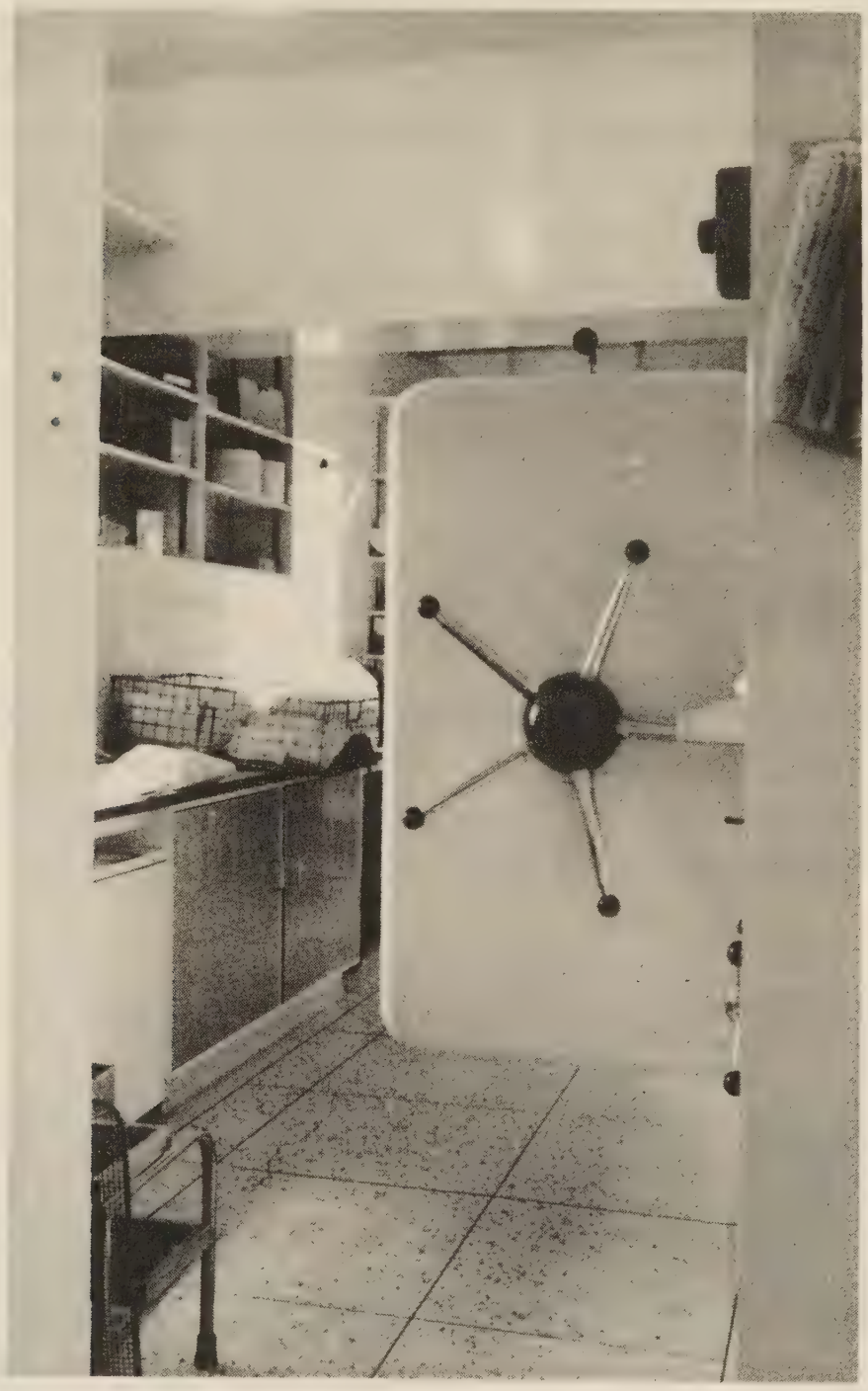
52. Wash room, central sterile supply department

(2) Packing room

This has a wash hand basin, glove "conditioner" and plastic covered packing bench along the window wall. Cupboards and knee-holes are under the bench, with racks for packing lists and envelopes above. Opposite the window wall, three stainless steel packing tables project from a range of adjustable shelving carrying stock. At one end is the superintendent's writing table; at the other end is a filing cabinet for records. Another wide opening leads to the reception bay.

(3) Reception bay

There is a hatch opening direct from the corridor, and there are shelves under the service counter. Emergency packs are stored on adjustable shelves near the door next to the hatch. A heat sealer stands in a recess at the window with a stack of adjustable shelves alongside. The width of the department is reduced by the autoclaves at this point.



53. Reception bay and sterilisers

(4) Autoclaves

The two 20 cubic feet autoclaves are serviced from the corridor. The sterilising cycle is automatic and takes 25 minutes. When the doors are opened there is a space of only 2'6" between the doors and the bench at the window side (photo. 53). This bench occupies the whole length of the window wall opposite the autoclaves, and there are cupboards under, and adjustable shelves over, between the windows. Under the windows, the worktop is pierced for radiators which significantly reduce the working area. There is an electric washing machine which is seldom used.

The autoclaves are unloaded on to a bench which terminates at a stack of "push-through" pigeon-holed shelves. This has been devised by the superintendent to ensure a simple first-in first-out result. At this point the department reverts to its full width (12'5").

(5) Sterile store

This store is just under 120 sq. ft. and has adjustable shelving on two walls and additional shelving in the middle with little space for a trolley. At the issuing hatch, there is a counter with shelves under a recess with more adjustable shelving nearby. It may be noted that box storage space has had to be improvised in the basement by enclosing an area with wire netting.

54. Sterile store

148. Much ingenuity has been shown in making full use of the available space in this inconveniently narrow department, and, although this is a small unit in cramped accommodation, much experience is being gained which will be of value in establishing a new, larger department in Phase 2.

149. There was a change of plan in the scope of this department which resulted in space being required for two high pressure high vacuum sterilisers. The plant is on two floors, and, apart from the inconvenience from congestion of services, this presents maintenance difficulties.

Points relevant to future planning

150. The following points may be noted.

(1) The importance of an orderly sequence of receipt, processing and dispatch of goods.

(2) The surprisingly large production capacity of a relatively small C.S.S.D., provided it is well planned.

(3) The increasing use of commercially supplied (and often disposable) items requires suitable goods receiving facilities and storage arranged convenient to the packing areas.

(4) Demands on the department and materials used are liable to change, and the layout and equipment should be capable of responding to these changes. Over complication is to be avoided.

(5) The trend towards area C.S.S.Ds. calls in question the future for departments of this size.

(6) It is not necessary to use nursing auxiliaries for this work.

IX - PHARMACY

Location

151. The pharmacy is situated on the ground floor, and, when Phase 2 of the hospital is completed, it will take over accommodation on the other side of the corridor presently occupied by the C.S.S.D.

Staff

152. The staff consists of a chief pharmacist, one pharmacist, three dispensary assistants and one storeman. No teaching of dispensary staff is undertaken. Lectures are given to nurses.

153. No changing accommodation is available for staff. Three metal lockers are placed in the corridor at the goods delivery entrance and one in the stockroom. There is no separate W.C. accommodation.

Function

154. Drugs are supplied to a total of 11 units in Fife. This includes the Kirkcaldy Victoria Hospital, and approximately 700 beds are served. There is almost no dispensing to out-patients except when there might be difficulty in having a prescription made up. No work is undertaken in respect of dressings, surgical sundries or instruments.

155. The chief pharmacist places orders and receives delivery notes which he checks and forwards to the Board of Management Offices. Invoices are not checked within the department. He consults with medical and nursing staff on drug usage and potential economies. There is agreement on supplying alternative equivalent preparations.

156. Sterile fluids are not prepared as it has been found cheaper to buy them. Some seven types are bought and so far no request for unusual fluids has been made. It was suggested that a still cheaper rate could be obtained if sterile fluids were purchased from commercial sources on a national contract.

157. A limited amount of manufacturing work is undertaken, e.g., for eye preparations. A small autoclave and a hot-air oven are available.

Transport and supply

158. General supplies from the pharmacy are sent to outlying units by van, which also transports C.S.S.D. supplies. Dangerous drugs go by registered post or are taken by pharmacy staff.

159. At the Victoria Hospital, the delivery to wards of the types of lotion which are frequently used, e.g., antiseptics, is twice weekly. This involves the use of specially designed large 2 foot square baskets which are partitioned to take Winchester bottles. While twice weekly rather than daily delivery may reduce the work in the pharmacy, it is doubtful if it secures any greater economy at ward level. Other items are supplied on demand and delivered by the storeman, or collected by nurses if needed urgently.

160. Dangerous drugs are collected from the pharmacy by registered nurses. Special order books are used. As noted above, the storage of scheduled poisons at ward level is not entirely satisfactory due to the lack of suitable cupboards.

161. A key of the department is kept in the medical staff residency, and, if required after normal hours, items are taken by medical staff from the shelves or cupboards, all of which are clearly numbered to correspond with a list. Such items are entered in a special book. The chief pharmacist has never been called out at night, and, indeed, he lives some distance away. No separate emergency cupboards are maintained either at the pharmacy or at the wards, although these would be preferred if space were available. Some emergency items are held at the operating theatre suite.

Accommodation

162. The general impression of the pharmacy is of a compact, neat, clean, well-ordered unit. There are large windows but supplementary fluorescent lighting is also used in the dispensary. The lino tiles are said to be a satisfactory floor finish.

163. Adaptations have been made in the original design. A room planned for an administrative officer is now used as the "in stock" store. A new free-standing store for inflammable items has had to be built. A hatch to the main corridor has been converted into a door, and a small counter formed within the dispensary. The door between the store for stock in use and the dispensary area was found to be superfluous and removed. In general the areas are too small, but the position will be improved in Phase 2 when the accommodation now used by the C.S.S.D. is taken over.

164. The Department comprises the following accommodation:-

(1) Receipt and dispatch

Vehicles back against a narrow verandah - some 4'6" deep with a guard rail - leading to a small hall 8'4" wide. This point is also used for laundry supplies twice weekly, and the consequent congestion results in empty cartons and drums being stacked on the verandah where they are somewhat exposed to the weather and other hazards. The front door of the hospital is also used, particularly by the hospital van which takes supplies to other units.

(2) Inflammable goods store

This is a separate building of 350 sq. ft. It is larger than would be strictly necessary for inflammable items and is used as a supplementary store for infusion fluids, empty bottles, etc.

(3) The "in stock" store

This store is at the delivery entrance. It is small (13'4" x 9'0") and fitted with adjustable shelving and a refrigerator. There is a 3 ft. deep cupboard with seven fixed shelves used for poisons and anaesthetics. The stock does not appear to be excessive but bottles and tins tend to spread out on the floor and the store could suitably be half as large again. Having been planned as an office, it has the wrong type of window for security purposes.

(4) Stock in use store

This store is 8'2" by 14'6" and is at the other side of the stores delivery point and adjacent to the dispensary. It is also somewhat congested, but items are neatly arranged on shelves round three sides of the store. Bulk supplies of lotions are contained in a row of six copper urns.

(5) Dispensary

55. Dispensary

The dispensary is 20'8" by 14'6". On the window wall there is a full length bench with glass fronted cupboards above; on the opposite wall there is a bench 12'0" long and a desk; in the centre there is an island bench with shelving rising to a height of 6'10". There are two sinks and a wash hand basin, a small autoclave and a hot-air oven, and a still which supplies 2 litres (1 Winchester) in thirty minutes. The still is connected direct to the main water supply which is preferred to water from the cold water storage tank. The large ward baskets are dealt with seriatim, and a space for the one being filled is available at the end of the window bench. The service counter is 5'0" by 2'2" and is said to be adequate. It is set in a lobby 7'0" by 6'10". All cupboards and drawers are clearly numbered.

(6) Chief pharmacist's office

This is a small office 7'0" by 10'6". It contains a desk and filing cabinets.

X - OFFICE ACCOMMODATION

Records

165. The records office is situated behind the small office at the reception counter of the out-patient department. A staff of six (including out-patient reception staff) normally works here. It is 40'9" x 12'4" and contains 78 ft. run of storage units 7 shelves high with mobile steps and a mobile cabinet, and a range of office equipment which includes 3 desks and chairs, 3 filing cabinets, a typewriter, 2 telephones and an addressograph machine. This last is in fact two machines - one makes the plates, the other does the printing - and they occupy a floor space 8'6" x 4'6" near the entrance to the office. They are noisy in use and might well justify a separate room. The machine produces particulars for all patients' records. Current plates are kept in a small cabinet 1'5" x 1'11" x 1'8"; old ones are attached to patients' record files in the storage units.

Other offices

166. Increasing demands for office space have given rise to difficulty since the hospital was opened. Not only have areas planned as open spaces been enclosed, but rooms designed for other purposes have been taken over as office accommodation.

167. Excluding nursing sisters' "duty" rooms in ward units, there are 34 rooms which might be designated as "offices" in buildings included in Phase I, and a total of 39 in the whole hospital. These offices are used by staff serving 123 general and 32 geriatric beds in this hospital. Certain office activities relate to other hospitals in the group.

168. A list of the various offices is given at Appendix N. Rooms used partly as offices and partly for other purposes - e.g., the radiographers' office which is also used as a viewing room, and the inclusion of some office work in the E.C.G. room by a senior registrar - are not included.

169. It may be noted that of the offices listed:-

(1) 17 represent a change of use from the original planning assumptions.

(2) 2 have been added by means of structural alterations.

(3) 2 offices (geriatric) are temporary i.e., their function will be transferred elsewhere when new accommodation becomes available.

170. The Board of Management offices are not included in Phase I. It should be noted that certain units which require a degree of office accommodation, e.g., the C.S.S.D. and the general stores, have only improvised and unsatisfactory arrangements.

171. The total floor area of office space outside ward units is 5,194 sq. ft.

XI - GENERAL STORES

Range of work

172. All classes of hospital stores are handled with the exception of medicines and food. Surgical dressings, instruments, medical gases, crockery, cutlery, bed linen, etc., are dealt with, and items are collected and forwarded for repair.

Units supplied

173. The hospitals in the East Fife Group are supplied with surgical dressings and sundries, and certain other additional items are provided for the group laboratory at Cameron Hospital. Crockery and hardware are supplied to Kirkcaldy Victoria and Kirkcaldy Orthopaedic Hospitals, but bedding and uniforms are handled for the Kirkcaldy Victoria Hospital only.

Staff

174. The staff consists of an administrative officer, 2 storemen and a junior clerk.

Records

175. Supplies are received from contractors, delivery notes checked and entries made in a "goods received" book. Order forms are made out in triplicate, and, on receipt of supplies, a copy is forwarded to the Board of Management offices together with the delivery note for checking against the related invoice. All requisitions for supplies are made on a printed form in triplicate, one copy of which is again forwarded to the Board of Management offices.

Transport and distribution

176. *(1) External*

A van from the Cameron Hospital is made available one day each month to deliver stores to units outside Kirkcaldy. Kirkcaldy Orthopaedic Hospital is supplied on a weekly basis.

(2) Internal

Stores are delivered by porters.

Accommodation

177. *(1) Main store*

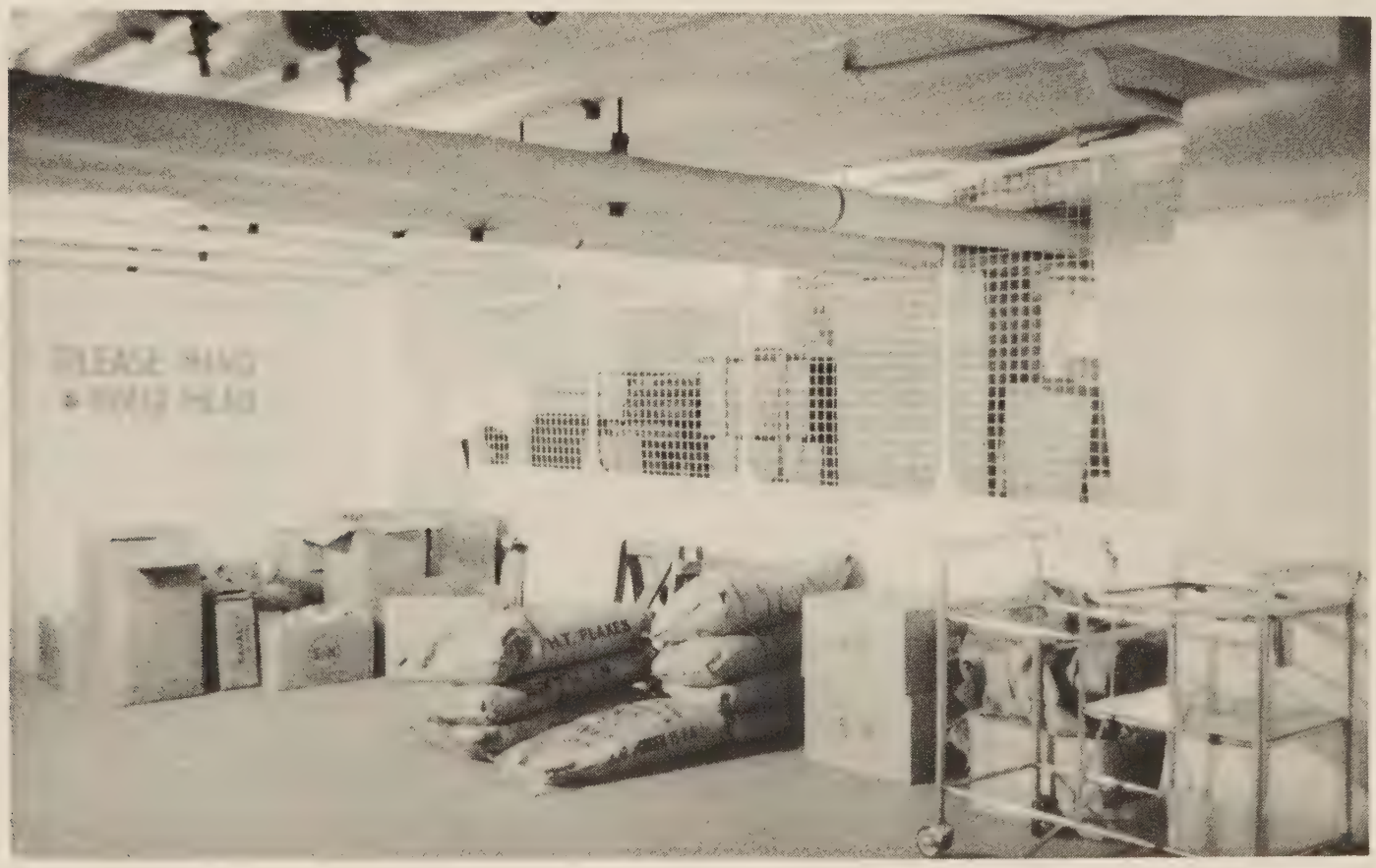
The planning assumptions as regards stores could not be ascertained, and it appears that suitable provision was not, in fact, made at the planning stage. The main store consists of a room in the basement 36'0" x 18'0". There are two doors leading from the main basement corridor which is 6'6" wide. A small reception and work table, approximately 5'0" x 2'6", is placed at the door furthest from the goods entry point, and a small desk 3'9" x 2'0" and two chairs are the only additional furniture. There are two telephones (one external and one internal). Stock is stored on adjustable metal shelving, four units of which are fixed and thirteen mobile on rails embedded in the concrete floor. Each unit measures 9'0" x 3'0". There are 48 shelves in the fixed units and 232 shelves in the mobile units. Because of the lack of space, ward baskets can only be made up one at a time. When filled they are placed in the corridor outside the store. The lighting in the store was designed when the area was intended for a different use. There are now five fluorescent and three tungsten lights. The store is grossly overcrowded and it is not surprising that the lighting is inadequate in certain parts. The store is ventilated by three high level centre-pivoted windows each approximately 3'6" x 1'6" which are only some 2'0" above pavement level; when they are open there are severe down draughts and dust infiltration.

56. Main Store

(2) Linen store

This store is situated on the ground floor in a room 20'8" x 16'8", and is almost at the other end of the hospital from the main store. It contains bedding, patients' clothing, nurses' uniforms and stationery. Again, the stock is kept on adjustable metal shelving arranged in 7 mobile units (4 of 3'0" x 9'0" and 3 of 1'6" x 3'0") and 4 fixed units each 1'6" x 3'0".

(3) Bulk store



57. Bulk store

Bulk items and C.S.S.D. stores are kept in an area of the basement which has been enclosed by wire netting approximately 18'0" x 18'0". Because of lack of space, however, a number of large packs are stored in the corridor outside the enclosure.

(4) Corridor

A variety of items, e.g. beds and trolleys, are stored along the basement corridor.

(5) Subsidiary stores

Three small rooms in a condemned building, formerly used as out-patient accommodation for dermatology, are used for spare beds, mattresses and stationery. This building is situated behind the kitchen/dining room block. In addition, some storage space in the Kirkcaldy Orthopaedic Hospital is used for stationery and bulk dressings.

Comment

178. The accommodation for storage is scattered and inadequate. There is no accommodation for empty containers. The entry point is exceedingly awkward and cannot be negotiated by lorries or vans. Bulk stores are frequently unloaded at the front door of the hospital and taken down by the lift which terminates near the wire mesh enclosure in the basement.

58. Stores entry point

179. The mobile shelving makes the best use of the restricted storage space. It is, however, not suitable for bulky items and contiguous bays cannot be used at once. In addition, the raised runners on the floor have been found awkward, and the shelf stock is less easy to check than if placed on open shelving.

180. A small stock of certain items such as instruments is held. They are ordered as required, and issued on receipt.

181. Inadequate accommodation increases the security risk, e.g., open containers have to be left in the corridor outside the main store prior to collection and delivery.

XII - KITCHEN AND DINING ROOM

Staff

182. The staff consists of -

catering officer
kitchen superintendent
assistant head cook
cook
3 assistant cooks
3 junior assistants

and in the diet kitchen a cook and an assistant cook (the assistant cook in the diet kitchen is a trainee dietician who is there for three months at a time).

183. There are five domestics who undertake washing up, and one porter who undertakes store keeping duties in addition to any heavy lifting. The dining room staff consists of seven maids. One maid attends in the evening and serves suppers. At night there is a baker/cook.

Work load

184. An indication of the load of work is that, approximately 450 lunches are prepared and served daily. Food is supplied to the wards, the main dining room, and the doctors' dining room.

185. Patients are given a choice. The menus are prepared on a six week rota. Certain items such as milk, butter, etc. for use at the wards, are collected by maids when they come to the dining room each morning.

Location

186. The main kitchen and dining room are in a separate block. Access from the hospital is not covered and this is a great disadvantage in bad weather. Delivery of stores from the main road is convenient.

59. View of path linking hospital to kitchen/dining room

Accommodation

187. *(1) Serving area*

Lunches are served in four 30-minute sittings. Occasional congestion was noted at the service counter.

(2) Cloakrooms

There are cloakrooms and lavatories for both sexes at either end of the dining room.

(3) Kitchen staff cloakrooms

These are congested because they are used as changing rooms and contain clothes lockers.

(4) Vegetable store

Because of unsatisfactory ventilation this is now used as a general store. It is 7'2" by 9'2" with a recess 10'6" by 2'0". There is insufficient shelving as indicated by a large number of items not only stored on the floor but blocking the communicating door between the store and the kitchen.

(5) Milk store

This room, which is 6'5" by 7'6" has terrazzo shelves, but has been found unsuitable for its original purpose as it gets extremely hot in the summer. It is now used as a store for items in current use.

(6) Disposal room

This room, which is 14'0" by 8'0" contains a hose and a grinder for waste material. It is a cool room and has therefore been used as a vegetable store in addition to its original purpose.

(7) Bread store

A small room, 8'0" x 4'0", in which bread, biscuits and jam are stored on adjustable shelving. It is suitable for this purpose. Although there is no window the room is ventilated by a grille in the door.

(8) Dry goods store

This room, which is 10'0" by 6'5" is located next to the calorifier room, but because of heat, cannot be used as originally intended. It now contains general hardware, and is also used for the storage of empty containers.

(9) Cold room

This room has been designed with two doors, one opening into a corridor and the other into the kitchen. The one to the kitchen is kept permanently locked in view of the possibility of both doors being opened and one or both left open at the same time. It has fixed wooden shelves on which stock - mainly perishable - is stored. It is now also used for the storage of milk supplies.

(10) Fish refrigerator

This is a room approximately 3'0" by 4'0" in area.

(11) Gas meter room

This room is used as a store.

(12) Catering Officer's office

This is a very small room, 7'9" by 6'5".

(13) Main cooking area

The layout of the equipment has proved satisfactory. There is a group of six boilers under two aluminium and plastic sheet glazed canopies with peripheral extract ducts. A small but annoying point is the difficulty of cleaning these ducts which can only be done by removing demountable wall sections each of which is retained by eight butterfly nuts. Potatoes are obtained direct from the adjacent potato store through a slot and there is a convenient arrangement of peeling, mashing, and chipping machines. There are separate areas for the preparation of the meat, fish, salads and for baking. There is a general wash-up room 18'0" x 6'0" at one corner of the main kitchen containing two large sinks and metal racks.

60. Kitchen canopy

(14) Special diet kitchen

This room contains two electric stoves, one steamer, a heated cupboard, storage cupboards, a mixer, two work tables, and two sinks. Some 60 diets are prepared daily. The small dietician's office is adjacent.

(15) Trolley bay

There is a bay with 20 electric sockets for heating food trolleys; it is suitable for its purpose.

(16) Dish washing

The dish washing area is next to the servery. It is in three main sections - two for washing and one for "sterilising".

(17) Lighting

General lighting in the kitchen averages 8 lumens/sq. ft. which is increased to 12/15 lumens when supplemented by under-canopy lighting. The illumination is considered good but shade cleaning requires to be carried out at fairly frequent intervals and the numerous, high-level acorn type fittings with an overhang reflector, e.g., 12 in the small diet kitchen, are not easy to reach.

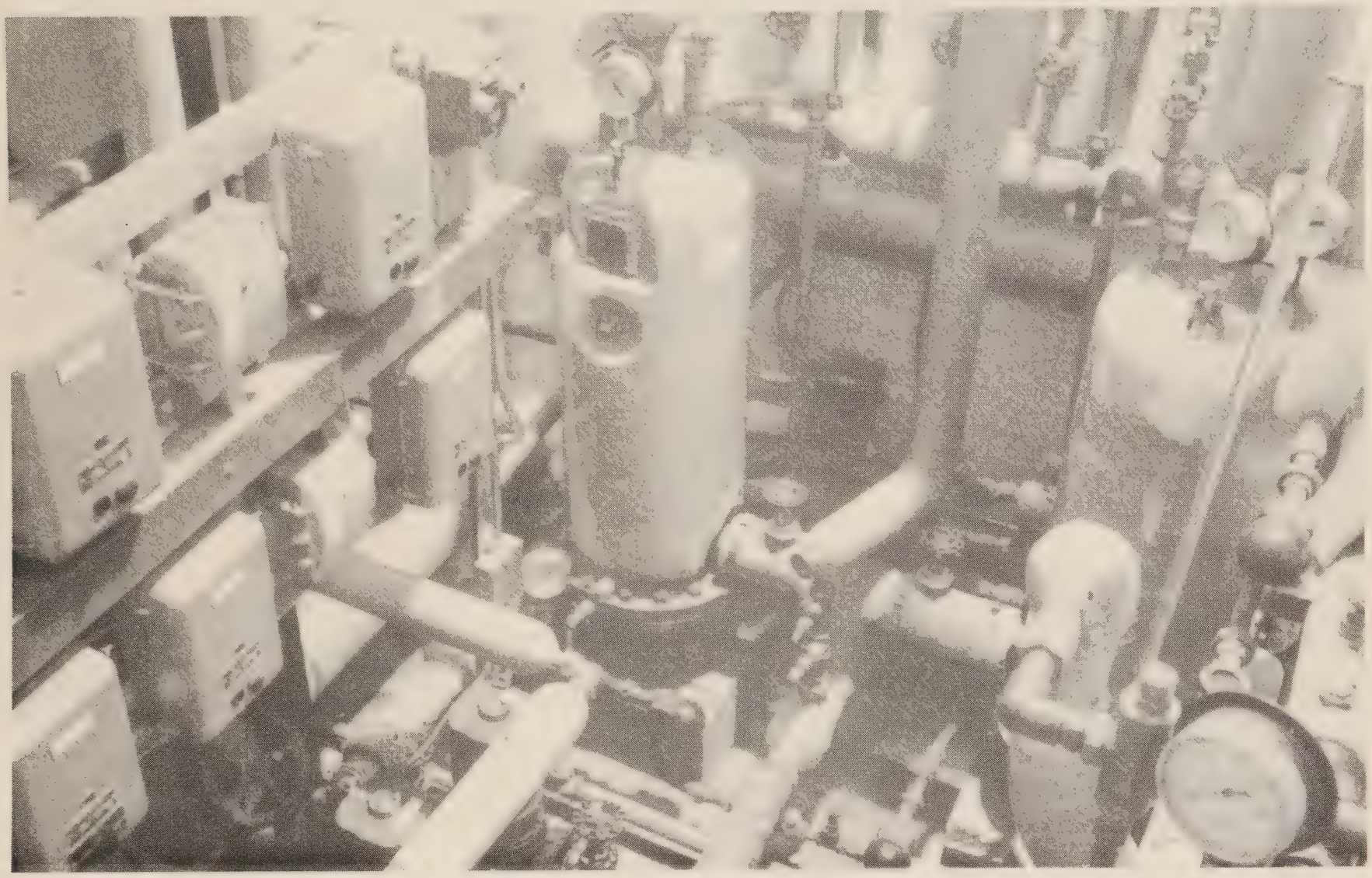
(18) Domestic service room

This room is used as a store for empty jars, and the slop sink is used for the disposal of tea leaves.

(19) Plant chamber

The building has its own plant chamber which is badly positioned off a short corridor between the kitchen and dining hall. The area is some 6 ft. below floor level and the space available is so inadequate that it is only with extreme difficulty that access is gained to parts of the plant to carry out any degree of maintenance. There are no lifting facilities and none can be installed because of the lack of load-bearing walls. Four or five workmen are required to manhandle the calorifier into

the corridor before the unit can be dismantled for periodic inspection. Due to inadequate ventilation the room becomes excessively warm. Access to the roof plant is through a lifting trap from this chamber and the arrangement is unsatisfactory.



61. Kitchen plant chamber

Dining room

188. The dining room is a rectangular room with a self-service counter along one long side behind a screen, floor to ceiling glazing on the other long side, and entrances at either end with cloakrooms and lavatories for both sexes. Moveable screens have been used to define separate areas for sisters and for nurses and other staff (except doctors who dine in the medical residency). The dining hall has a heated ceiling supplemented with a plenum heating system. Conditions are considered satisfactory but large areas of the acoustic tiled ceiling are badly stained around the air diffusers.

189. Present seating provision is for 120 at tables for four. It is anticipated that the dining room capacity has sufficient reserve for Phase 2 of the Hospital. It is to be supplemented by a coffee lounge which is expected to facilitate full use of the dining room.

190. The dining room gives a pleasantly spacious and quiet impression, and, although at some little distance from the Hospital itself, is well sited to give an attractive view over the tennis court in a little valley with the hospital lying beyond.

XIII - DOCTORS' RESIDENCY

Description

191. The doctors' residency is situated on the first floor, but will be moved to the top of the 14 storey block in Phase 2; the existing accommodation is intended to become offices. Its present situation seems satisfactory, being a cul-de-sac under the theatre suite and adjacent to the wards. Although it is well embedded in the main building, it still offers reasonable seclusion.

192. As far as construction and finishes is concerned, it is a normal part of the ward block of the hospital; external walls, floor finishes and ceiling heights being the same as in the wards, and the only difference being in the layout and services. There are 13 bedrooms for doctors of either sex, but three of these have had the wardrobe and dressing-table unit taken out to make room for a second bed, so that, in effect, there are 10 single rooms and three double ones which are used for relief doctors and students.

Accommodation

193. The residency comprises the following accommodation listed clockwise starting at the entrance:

(1) The domestic service room is next to the entrance. It is well situated but only 37 sq. ft. in floor area.

(2) Next to the domestic service room is a room of 90 sq. ft. which was originally planned as the housekeeper's office. It is now used as a maid's changing room and an ironing room.

(3) The small lounge (10'6" x 19'0") contains a number of easy chairs and a television set. There is a folding partition between this room and -

(4) The dining room (19'7" x 19'0") which contains 5 tables for four and a hot plate. There is also a piano.

(5) The kitchen has a connecting door to the dining room. Meals come in a heated trolley which can be plugged into a socket in the corridor. Light meals and drinks, etc., can be prepared in the kitchen which is 6'0" x 19'0" plus a 3'0" deep bay, and contains a refrigerator, a cooker, sink and work-top with storage.

(6) The quiet lounge (i.e., no T.V!) is used as a coffee room, and there is a hatch to the work-top in the kitchen. This room is an involved plan shape due to ducts, etc., to the theatres above. This is probably quite good because it provides a number of nooks for small groups of people. Its size is 11'6" x 19'0" less ducts - a net area of about 150 sq. ft.

(7) Doctors' bedrooms are arranged along either side of a central corridor. One enters through a lobby (4'8" x 9'8") which contains a wash hand basin and mirror on one side, and a built-in wardrobe with hanging space and drawers with a suitcase cupboard above on the other. Passing through the inner door one enters the bedroom proper (13'8" x 9'8"). This contains a bed and bedside table, writing table, chair and easy chair, a free-standing wardrobe-cum-dressing-table unit, some built-in shelves in a corner next to the door, and in the rooms on the south side of the block only, a large built-in cupboard for clothes, trunks, etc. The complaint has been made that the table lamps provided for the bedside tables are susceptible to accident and would be better replaced by built-in bedhead fittings.

(8) At the far end of the residency there is a linen room of 68 sq. ft. in floor area.

(9) The bathroom at this end of the residency is reserved for ladies only when there are lady doctors resident, but the men use it when there are not. It comprises a bathroom compartment, a W.C. compartment with incinerator and a shower compartment with a wash hand basin in the open central space.

(10) On the north side of the building, there is a large bay off the corridor which gives access to the men's bathroom. There is a table tennis table (much used) in this bay which has an acoustic tiled ceiling. There was a telephone in this bay, but it proved too public and an enclosed booth has been built at the west end of the residency.

(11) Next to this bay a door from the corridor leads to a room with a shower compartment, two W.C. compartments and a wash hand basin in the middle. It has only borrowed light from the bay next door, and this has had to be curtained because the obscured glass was not sufficiently obscure.

(12) In general, the residency seems quite adequate for its purpose, although it has been suggested that the two small lounges flanking the dining room are not sufficiently big considering that the doctors frequently entertain visitors. It has to be remembered, however, that one of the lounges and the dining room can form one large room, and doctors who want to sit and read quietly can probably do so better in their bedrooms than in either of the lounges. The doctors appear to be ardent sunbathers, undeterred by the fact that their only access to a roof (which affords no privacy) is through the ladies' bathroom.

XIV - NURSES' HOME

194. The nurses' home, situated to the north of the hospital, is a separate, six-storey building the unusual appearance of which has excited some favourable comment. The ground floor is allocated to reception and recreation areas and the other five floors to bed-rooms, sitting rooms and ancillary accommodation. As far as possible each floor has been allocated to one grade of nurse, i.e. 1st year student nurses are on the 1st floor; 2nd year student nurses on the 2nd floor: 3rd year student nurses on the 3rd floor; sisters on the 4th floor and night nurses on the top floor.

Ground floor

195. The accommodation on this floor consists of a small entrance hall, a recreation area, a kitchen, Home Sister's office, box-rooms, linen room, telephone kiosks, W.C.s. and a lift.

(1) Entrance lobby

This area measures 10'0" x 14'0" and is entered from the main door of the nurses' home. This door is, however, kept locked as it is too easily accessible from the main road. The lobby is used as a holding area for linen bags and for items awaiting repair.

(2) Recreation area

This was a large open area entered directly from the side door of the nurses' home. The south wall of this area has extensive glazing and this, together with the fact that there is only one hot-air convector heater, tends to make it very cold. The area has now been divided, making a recreation/sitting room on one side, and an entrance lobby with ancillary rooms on the other side. Since these alterations have been made, the area has been more extensively used. Recreation equipment consists of a table tennis table, a television set, a radiogram and a piano.

(3) Home Sister's office

This room of 10'0" x 14'8" opens directly off the front entrance lobby. It contains the usual office furniture and is slightly too large for its function.

(4) Kitchen

This room of 6'6" x 12'0" opens off the entrance lobby of the recreation area which it serves. It has sufficient equipment and cupboards for its function.

(5) Box-rooms

One box-room of 9'6" x 10'0" is provided for the storage of trunks and suitcases. A small area under the emergency staircase has now been adapted for use as an extra store - mainly for domestic cleaning equipment.

(6) Linen store

This room of 12'0" x 6'6" was originally planned as a cloakroom for the recreation area but is now used to store the linen supply for the whole of the nurses' home. There is no collection point for dirty linen and the entrance lobby is used for this purpose.

(7) Telephone kiosks

Two partially enclosed telephone kiosks were provided at the main entrance. These are the only external telephones in the nurses' home. The sound proofing of these kiosks proved quite ineffective, and they have now been completely enclosed.

(8) Lift

One passenger lift capable of taking 8 people communicates with all floors.

(9) W.C. compartments

Three W.C. compartments have been provided within an area containing one wash hand basin and an incinerator. This area is adjacent to the recreation room. Adverse comment has been made of the fact that dividing walls do not reach ceiling level. There is also one W.C. compartment situated off the main entrance hall for the use of male visitors.

(10) Domestic service room

This area of 36 sq. ft. is too small for the storage of bulky cleaning equipment. It is well lit and ventilated and provides storage space for small items of equipment.

1st - 5th floors

196. Each of these floors has essentially similar accommodation. There are 17 bedrooms, a sitting room, a utility room, a writing room, bathrooms, W.C. compartments and a domestic service room.

Bedrooms

197. The bedrooms open off both sides of a corridor. The bedrooms on the south side measure 8'6" x 8'0" and those on the north side measure 10'6" x 8'0".

198. Each bedroom is entered through a small partitioned lobby measuring 4'0" x 7'6" which contains a built-in wardrobe and a wash hand basin. The bedrooms contain a divan bed, a dressing/writing table and an armchair. A small carpet is provided. There is no overbed light, and the use of table lamps on a small shelf by the bedside has had to be discontinued because of breakages.

199. The windows are of the horizontally pivotted type and are difficult to open when curtains are in position. Both curtains require to be pushed clear of the opening light of the window before it can be opened. The curtain rails are recessed in the ceiling and this has led to some difficulties in maintenance.

200. On the first floor the area which, on the other floors, is occupied by four bedrooms, has been used to provide 2 two-room suites for the home sister and an administrative sister. This allows a bedroom of 10'0" x 8'0" and a sitting room of 14'0" x 7'10". The bedroom is separated from the inner corridor of the suite by a 2'6" wood partition with opaque glazing to the ceiling, and this affords little privacy for the occupant when the external door of the suite is opened. The furniture of these suites consists of a divan bed and wardrobe in the bedroom, and a dressing/writing table and two armchairs in the sitting room. An electric fire has been installed on one wall in the sitting room. Separate bathroom or shower accommodation has not been provided.

201. On the fourth floor, the sisters have been given the use of two rooms to enable them to have both a bedroom and a sitting room.

Ancillary accommodation

202. This accommodation is the same for all floors except the ground floor.

(1) Utility room

This room of 8'3" x 14'0" contains a sink, an airing cupboard and a wash hand basin with shampoo attachment. The room was intended to be used for the storage of linen for the floor, but the cupboards supplied for this purpose are now used as drying and airing cupboards. The room is used for washing, ironing and hairwashing.

(2) Bathrooms

There are three bathrooms on each floor. Each bath is free-standing and is fitted with a shower attachment. One bathroom on the first floor has now been allocated to the Home Sister.

(3) W.C. compartments

There are three W.C. compartments on each floor. These are adjacent and contained within the same area as one wash hand basin and an incinerator. One of the W.C. compartments has now been allocated to the Home Sister.

(4) Sitting-room

This area of 18' 0" x 15'0" is partially divided from the corridor by an open storage fitment, but this does not prevent the room from being very draughty. The north wall of this room is glazed above a level of 3'0".

(5) Writing room/study

One bedroom on each floor has been converted into a room in which nurses may study or write. It measures 14'0" x 8'3" and contains two tables, 2 armchairs and two small chairs.

(6) Domestic service room

This room is 5'6" x 3'0" and is too small for the storage of cleaning equipment; the electric switch room on each floor has been used for this purpose.

(7) Kitchen

This room of 8'0" x 6'6" contains a sink unit, storage cupboards and a small electric cooker. It appears to be adequate for its function.

Comment

203. The following points may be noted:

(1) Even with the lobby of 30 sq. ft., the bedrooms of 68 sq. ft. are too small; those of 84 sq. ft. are reasonable.

(2) No collection point has been provided for dirty linen.

(3) One wash hand basin is not enough to serve three W.C. compartments.

(4) Sitting rooms are too exposed to be comfortable.

(5) No baths or W.Cs. have been provided within the suites of rooms.

(6) Domestic service rooms are too small at approx. 18 sq. ft. for the storage of bulky cleaning equipment.

(7) No overbed reading lights have been provided.

XV - SCHOOL OF NURSING

204. To meet the teaching needs of the completed hospital, a separate three-storey building (formerly the nurses' home and administrative offices of the hospital) has been converted for use as a school of nursing. Teaching of student and pupil nurses from the Victoria, Cameron and Randolph Wemyss hospitals is undertaken at this central school. Approximately 100 student nurses and 50 pupil nurses are in training in the three hospitals, leading to classes of 30 student/pupils in the school at one time.

Staff

205. Director of Nurse Training.

1 Tutor

3 Unqualified tutors

1 Secretary

Accommodation

206. *(1) Lecture rooms*

(a) 600 sq. ft.

(b) 280 sq. ft.

(c) 240 sq. ft.

(d) 200 sq. ft.

The rooms are fitted with blackboards, X-ray viewing boxes and storage cupboards. They are adequate in size and number for the small groups of nurses in the school at the present time.

(2) Demonstration rooms

(a) 530 sq. ft.

(b) 440 sq. ft.

(c) 230 sq. ft.

The large room contains four gas stoves, 2 sinks, storage cupboards and 3 large work tables. Two equipment rooms of 30 sq. ft. and 50 sq. ft. open directly off this room. The two other rooms contain beds and cots for bedmaking practice.

(3) Library

A room of 180 sq. ft. is used as a reference library and study by both trained staff and nurses in training.

(4) Study writing rooms

Two rooms of 80 sq. ft. and 140 sq. ft. are furnished as studies for 2-3 people.

(5) Offices

Five rooms are furnished as offices. Each member of staff has his/her own office.

(6) Cloakrooms

Two adjacent rooms of 180 sq. ft. and 150 sq. ft. have been converted for use as cloakrooms. At present they are used as changing accommodation but are inadequate for this function.

(7) Sitting rooms

Staff sitting room of 150 sq. ft.

Nurses' sitting room of 240 sq. ft.

These rooms are used between classes and for tea and coffee breaks.

(8) Residential accommodation

Accommodation for two resident tutors consists of

2 Bedrooms

2 Sitting rooms

1 Bathroom

1 W.C.

1 Kitchen

1 Boxroom

(9) Matron's flat

A self-contained suite has been provided for the Matron of the Victoria Hospital. Accommodation consists of

1 Sitting room

1 Dining room

1 Bedroom

1 Bathroom

1 Kitchen

(10) The provision of W.C.'s, domestic service room and storage rooms on each floor is more than adequate.

Comment

207. As a group training school and with the opening of Phase 2 of this hospital, larger classes will be necessary and the accommodation now available will be inadequate.

XVI - BOILERHOUSE

Description

208. The boilerhouse is situated in the south-west corner of the site. It contains three coal-fired boilers with mechanical feeds from underground coal storage hoppers. They provide steam for central heating, domestic hot water, laundry, cooking and sterilising, and there is sufficient capacity to serve Phase 2 of the hospital when completed. Insulated pipes carry steam to the hospital buildings through underground ducts.

209. The building is steel-framed, 52'6" x 71'0" x 20'0" high, and has a free-standing brick stack common to all boilers.

Comment

210. The only serious defect noted in the building itself was an inadequate glazing detail. The large sheets of glass in the top-hung opening lights have strained the supporting lugs at the foot of the glazing bars. Consequently they slip and either break on the sill when the window is closed or distort the frame.

62. Grillage to coal bunkers outside boilerhouse windows

211. The whole of the boiler fuel stock is contained in three underground bunkers filled by heavy road haulage lorries through a grillage which flanks one wall of the boilerhouse. Unfortunately the window detail on this elevation (bottom outward opening) unavoidably allows the coal dust to gravitate into the boilerhouse, creating difficulties in keeping a clean and efficient plant. The small partitioned office, staff changing room and toilet with no ceiling suffer notably from this complaint.

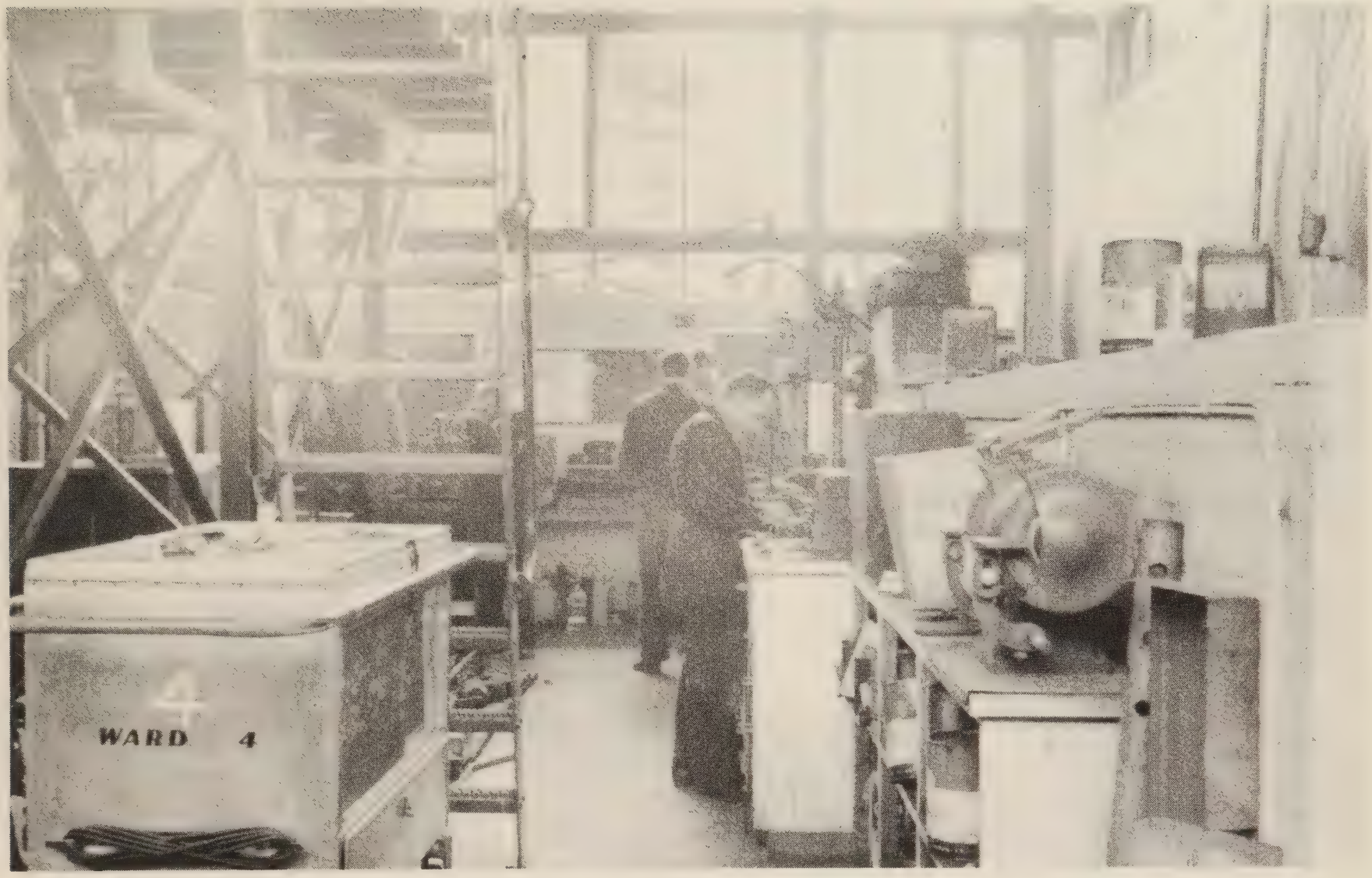
212. The width of the firing floor is rather limited and when grates are withdrawn for servicing, working conditions become difficult. In addition to this, the use of long-handled tools is impeded by the positioning of instruments and electrical control panels fixed on the opposite wall.

213. Ash removal is extremely difficult. There is no handling plant within the building; the refuse is barrowed outside to a bunker designed for back-end loading on a lorry; this is a tiring and time-consuming job which a bunker with side-loading facilities would have made easier.

214. When one of the coal elevators breaks down for any reason, it is necessary to use a neighbouring elevator and transfer the coal by hand. A portable emergency feed could be contrived to divert coal to adjacent boilers when necessary.

215. When dust extraction from the back of the boiler is carried out by a firm on contract, they bring portable suction apparatus. When, as here, the job is done by the boilerhouse staff, the provision of vacuum extraction plant might be justified.

216. In one corner of the boilerhouse there is a cloakroom with W.C., wash hand basin and lockers, and a small office 6'0" x 7'0". These are partitioned but not roofed in, and are consequently very dirty. A shower has been fitted in the cellar under the coal hoppers. The office is small and dirty and the engineers have improvised another office in a corridor next to the nearby school of nursing. This is not, however, adequate to house the various desks and plan chests for drawings, etc., required for planned maintenance programmes.



63. Work benches in boiler house

217. There is no planned engineering workshop at the hospital, and the makeshift facilities in the boilerhouse are not satisfactory. There is a work bench 14'6" long between the door and the boilers, but without sufficient space to pass behind the man working there. There is very little storage accommodation. This work bench not only serves the boiler plant; it is the only place for maintaining equipment, etc., in the hospital. Two heated meal trolleys were observed here being repaired in this appreciably dirty environment and emphasised the need for an adequate maintenance workshop.

218. Engineering workshop facilities in a boilerhouse have many drawbacks, e.g., -

(1) an efficient central steam-raising plant should be a separate unit on its own;

(2) when a boilerhouse becomes cluttered with work-benches, tools and equipment awaiting repairs, it is a disincentive to proper management;

(3) control of staff is more difficult when different types of labour and trades occupy the same accommodation;

(4) there is no place to store engineering material which is deposited in any convenient corner;

(5) there is no proper office accommodation for the hospital engineer to carry out his paper work and record keeping.

219. Another minor point noted was that electric lights are not positioned conveniently for reading meters and gauges at various points. This perhaps would only be appreciated after a period of use, and could easily be rectified.

Points Relevant to future planning

220. (1) Detailed consideration should be given, in the design of a solid fuel boilerhouse, to ventilation requirements, general cleanliness and full space for access and maintenance.

(2) Office, changing room, shower, etc., should be provided in boilerhouses.

(3) In addition to the domestic accommodation provided in the boilerhouse itself, the hospital engineer ought to have a separate office to enable him to carry out his full responsibilities in a satisfactory manner.

(4) It may be desirable to have the engineering workshop near to the boilerhouse but certainly not part of it, and this important department must be carefully considered in the over-all planning.

XVII - MORTUARY

Location

221. The mortuary is a free-standing timber-clad building 46'6" x 21'6". It is conveniently situated near the service entrance at the south-west corner of the site.

Accommodation

222. The main accommodation is as follows:

(1) Post-mortem room

This is about 230 sq. ft. in area, and has the normal bench and sink fittings. There is one P.M. table - a porcelain model with fixed drainage. The walls are tiled to door-head height and the floor is terrazzo. The obscured glazing of the large window at the bench does not secure sufficient privacy.

(2) Utility room

This room is 50 sq. ft. in area, and is large enough for its purpose. There is a stores cupboard adjacent to the door.

(3) Staff changing room

There is a small staff room next to the P.M. room with a W.C. compartment opening off it.

(4) Body store

There is refrigerated storage for 12 bodies, but no more than 7 compartments have been required at one time. The area in front of the bank of cold stores is 150 sq. ft., and this is sufficient for the elevator and the concealed type trolley. This room is used by the undertaker, and there is a direct exit to the hearse.

(5) Viewing room

At the end of the block there is a room of 200 sq. ft. which is used for relatives when they have to wait, for the viewing of bodies, and occasionally for religious services.

Work load

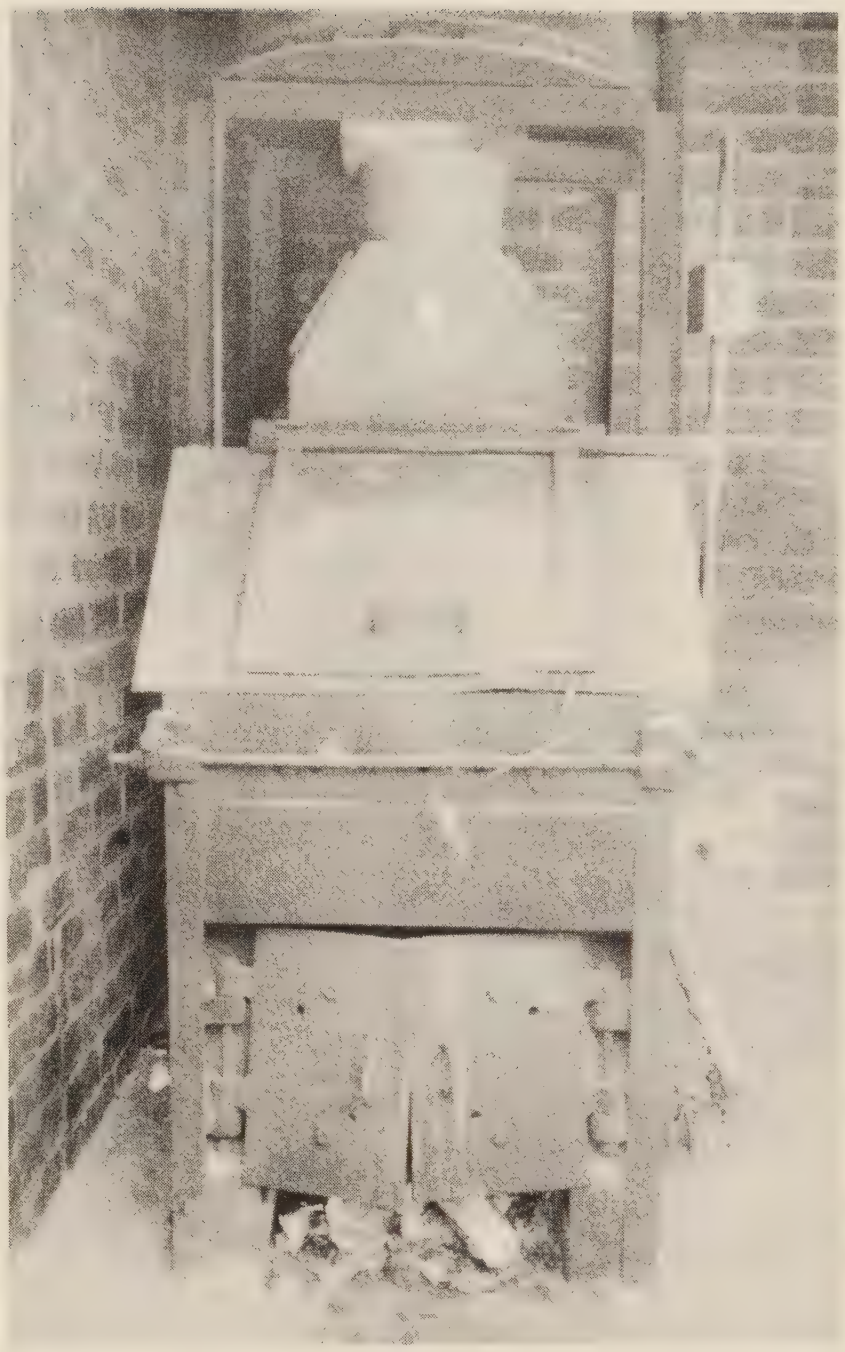
223. As an indication of the work undertaken in this department, 171 autopsies were performed during the calendar year 1962.

XVIII - DISPOSAL ARRANGEMENTS: INCINERATION

Description

224. The disposal of refuse from wards and other areas of the hospital is by means of a large galvanised iron container on wheels which was locally designed. This work is almost the sole occupation of one porter; collections are made twice daily from each ward.

64. View of disposal area



65. Incinerator

66. Refuse awaiting disposal

225. A small incinerator is situated near the boiler house. This is about a quarter of a mile from the main hospital block. The incinerator was brought into use some seven or eight years ago when the new automatically fed boilers were installed.

226. It is a poor installation, badly housed under a lean-to corrugated iron shed with very little free floor space to shelter the attendant or store waste material collected from the hospital. It is near the main road and complaints are frequently received from houses nearby. It is much too small, generates insufficient heat, and, being exposed and at a distance from the main hospital block, is particularly inconvenient in use when weather is inclement. The unit is rated at ¼ ton per 8 hour duty. It requires about half an hour for a porter to dispose of one "barrow" of miscellaneous rubbish. Waste is now sorted into refuse for the incinerator and material which is removed by the local cleansing or paper salvage department. The incinerator flue has a simple Vortex type grit arrester which is quite ineffective while operating under the present working arrangement.

227. At the time of inspection, the wind was scattering refuse over a wide area near the incinerator and making the work of shovelling difficult. Not all the rubbish was enclosed in paper bags. The heat in the incinerator is inadequate to deal with aluminium foil, and material from the operating theatre such as limbs or tumours have to be taken to the Kirkcaldy General Hospital for disposal.

228. At one time the "barrow" was taken from the incinerator into the wards; this was unsatisfactory from the point of view of contamination, and, owing to its size, it caused damage to the jambs of several doors. This practice has now ceased.

Points relevant to future planning

229. With the completion of the Phase 2 development, it will be necessary to consider a modern incinerator capable of consuming all types of appropriate waste without discharging any residue into the atmosphere. The efficiency of operation will be bound up with a studied plan for collection, segregation and the disposal of hospital waste.

HOSPITAL MORBIDITY STATISTICS

Discharges in 1961 by Parish of Residence

Area of Reference	*No. of Discharges*
Fife Co.	
Dunfermline Burgh	1
Kirkcaldy Burgh	899
Dunfermline Parish	3
Inverkeithing "	2
Aberdour "	3
Burntisland "	127
Kinghorn	87
Kirkcaldy & Dysart Parish	873
Auchtertool Parish	3
Beath "	18
Ballingry "	45
Auchterderran "	262
Kinglassie "	69
Leslie "	54
Markinch "	425
Wemyss "	537
Kennoway "	100
Scoonie "	304
Largo "	52
Kilconquhar "	5
Elie "	28
St. Monance "	14
Pittenweem "	26
Anstruther Wester Parish	24
Kilrenny Parish	10
Crail "	25
Kingsbarns "	4
St. Leonards & St. Andrews Parish	42
Dunino Parish	2
Ceres "	1
Cults "	1
Kettle "	9
Falkland "	8
Strathmiglo "	3
Auchtermuchty Parish	2
Collessie "	5
Newburgh Parishes	1
Cupar "	23
Forgan "	5
Leuchars "	6
Ferry Port on Craig Parish	4
Parish not Known	46
Total	4,158

Area of Reference	*No. of Discharges*
Inverness Co.	
Inverness Burgh	2
Kilmalie Parish	1
Total	3
Orkney Co.	
Westray Parish	1
Holm "	1
Eday & Pharay Parish	1
Total	3
Perth & Kinross Co.	
Kinfauns Parish	1
Dunkeld & Dowally Parish	1
Orwell Parish	1
Kinross "	1
Total	4
Midlothian Co.	
Edinburgh City	8
Kirknewton Parish	1
Lasswade "	2
Dalkeith "	2
Heriot "	1
Parish not Known	1
Total	15
West Lothian Co.	
Linlithgow Parish	1
Bathgate "	2
Total	3
Clackmannan Co.	
Tillicoultry Parish	1
Total	1
Dunbarton Co.	
Clydebank Burgh	1
Total	1

Area of Reference	*No. of Discharges*
Lanark Co.	
Glasgow City	10
Glasgow Parish	1
Shotts "	1
East Kilbride Parish	2
Avondale Parish	1
Parish not Known	1
Total	16
Renfrew Co.	
Eastwood (Part of) Parish	1
Stirling Co.	
Stirling Burgh	1
U.K. - Apart from Scotland	5
Foreign Countries	3
Grand Total	4,214

CATEGORIES OF STAFF

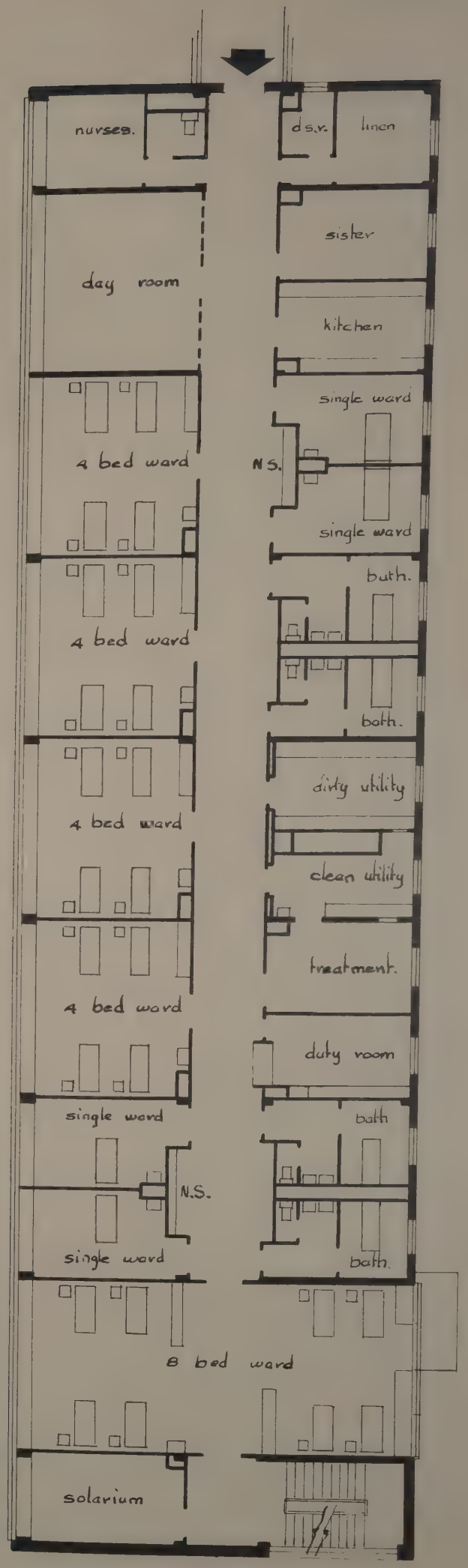
	F.T.	P.T.
Medical Staff		
Consultants (including visiting consultants)	13	6
Registrars	3	-
Doctors below Registrar status	8	-
Nursing Staff		
Matron	1	-
Assistant Matron	1	-
Tutors	3	1
Sisters	20	2
Staff Nurses	17	8
Enrolled Nurses	1	11
Student Nurses	92	-
Pupil Nurses	2	-
Nursing Auxiliaries	16	63
Pre-Nursing Students	11	-
Domestic Staff		
Catering Officer	1	-
Domestic Superintendent	1	-
Head Cook, supervisory	1	-
Head Cook, assistant	1	-
Cooks	3	-
Assistant Cooks	5	-
Apprentice Cooks	2	-
Kitchen Porters	2	-
Kitchen Maids	7	1
Dining-room Supervisor	1	-
Dining-room Maids	4	4
Domestic Forewomen	3	-
Ward Maids and Others	11	60
Ward Orderlies	7	1
Operating Theatre Attendants	5	-
Sterilising Attendant	1	-
Dressmaker	-	1
Sewing Maids	1	3
Tea Bar Attendants	-	2
Telephonists	4	-
Driver	1	-
Porters	11	-
Stokers	4	-
Engineer's Labourer	1	-
Electrician	1	-
Fitters	2	-
Storemen and Reception Centre Attendants	5	-
Gardening Staff	2	-
Medical Auxiliary, etc., Staff		
Pharmacy	6	-
Physiotherapists	2	-
Radiographers	10	-
Dark-Room Technicians	3	-
E.C.G. Room Assistant	1	-
Occupational Therapist	1	-
Administrative and Medical Records Staff		
Administrative Officers	5	-
Medical Records Staff (Including Reception)	19	-
Totals	331	163

28 bed Ward Unit

1/16 in : 1 ft

Ward 6
(men's surgical)

b	bath
CU	clean utility
D	duty room
DR	day room
DU	dirty utility
DSR	domestic service room
K	kitchen
L	linen
NC	nurses' cloaks
NS	nurses' station
S	sister's office
T	treatment room
w	wash hand basin
wc	W.C.



WARD 6 - NUMBER OF NURSES ON DUTY

DATE	MONDAY			TUESDAY			WEDNESDAY			THURSDAY			FRIDAY			SATURDAY			SUNDAY		
Week Beginning	* M.	A.	E.	M.	A.	E.	M.	A.	E.	M.	A.	E.	M.	A.	E.	M.	A.	E.	M.	A.	E.
8.1.62	12	7	6	11	6	5	8	8	6	9	8	6	8	8	6	9	7	6	7	7	7
15.1.62	10	7	5	9	6	5	9	7	6	8	7	6	10	7	5	9	7	5	6	7	7
22.1.62	9	5	5	9	7	6	8	7	6	10	7	5	10	8	6	9	7	6	6	6	6
29.1.62	8	5	5	7	7	5	6	4	4	5	7	4	6	6	5	7	5	3	5	5	5
5.2.62	8	5	4	7	6	5	10	7	7	10	7	5	9	7	7	9	7	7	8	7	7
12.2.62	11	8	6	9	7	7	10	6	5	9	9	6	10	9	5	9	6	8	8	7	7
19.2.62	11	7	6	10	8	6	10	8	6	9	8	6	10	7	5	9	7	7	7	8	8
26.2.62	9	6	6	7	6	5	7	6	5	7	7	5	9	4	5	8	6	5	6	5	5
5.3.62	9	6	5	9	6	4	8	6	5	8	6	5	10	7	5	8	6	6	6	5	5
12.3.62	10	7	5	9	7	6	9	7	6	10	7	6	10	7	5	10	5	4	6	6	6
19.3.62	8	6	5	9	6	5	8	6	5	8	6	6	8	7	5	8	6	5	6	5	5
4.6.62	9	6	5	8	7	5	8	7	5	7	5	4	8	4	5	10	7	5	6	6	6
11.6.62	7	8	5	9	5	5	7	8	6	9	5	5	8	7	5	9	7	5	6	7	7
25.6.62	7	5	4	7	5	4	7	5	4	7	5	5	7	5	4	8	7	5	6	5	5
2.7.62	9	6	5	8	6	6	8	7	5	7	7	6	10	6	4	8	8	5	7	6	6
9.7.62	9	6	6	10	6	5	9	8	6	8	8	6	9	7	6	9	7	6	6	6	6
30.7.62	9	7	6	10	7	7	11	7	7	10	7	5	10	6	7	11	8	6	6	6	6
6.8.62	9	6	5	10	8	7	11	7	5	8	8	5	8	8	7	10	6	7	6	6	6
13.8.62	12	7	6	10	8	7	9	8	7	12	7	7	9	8	5	10	8	6	6	6	6
20.8.62	10	7	5	9	6	6	10	7	6	8	7	7	10	6	6	10	7	6	6	7	7

*M = Morning
A = Afternoon
E = Evening.

DETAILS OF CASE LOAD

WARD 6 (MEN'S SURGICAL)

No.	Age	Condition	Treatment
1.	71	Retention of urine (disorientated)	For theatre next day. Having bladder lavage twice daily.
2.	65	Pulmonary tuberculosis. Peri-urethral fistulae. Pulmonary embolism. Coronary thrombosis.	Isolation. Twice daily dressings. Drug therapy.
3.	67	Retention of urine	For theatre next day. Bladder irrigation twice daily.
4.	67	Neoplasm of stomach - Oesophageal - gastrectomy	2 Hourly fluids.
5.	75	Neoplasm of rectum - Excision of rectum - colostomy - Retention of urine	Rectal and colonic lavage daily. Catheterization 4 hourly. Frequent colostomy dressings.
6.	54	Nephrectomy - Frequent haemorrhages	4 hourly blood pressure recording. Frequent dressings.
7.	80	Retention of urine - Perineal prostatectomy. Gangrene of feet - Amputation of toes.	Bladder lavage twice daily. Frequent dressings.
8.	69	Gastroenterostomy and Vagotomy Rupture of wound	Wound irrigation thrice daily. Frequent dressings.
9.	59	Neoplasm of bowel - Colostomy	2 hourly gastric aspiration. I.V. Therapy 2 hourly blood pressure recording. 4 hourly rectal and colostomy irrigation.
10.	48	Neoplasm of pancreas Gastroenterostomy	2 hourly feeding.
11.	70	Neoplasm of bowel - Hemicolectomy	Continuous drainage. I.V. therapy, Dressings thrice daily.
12.	51	Neoplasm of stomach - Gastrectomy	2 hourly fluids.
13.	78	Neoplasm of bile duct - Excision of bile duct - Insertion of "T" tube	Frequent dressings. Replacement of bile twice daily.
14.	77	Neoplasm of stomach	Rectal lavage twice daily (prior to barium enema). Test meals.
15.	75	Cholecystectomy - Insertion of "T" tube	Frequent dressings.
16.	71	Gastroenterostomy	2 hourly fluids.
17.	78	Gastroenterostomy - Diarrhoea	Rectal lavage twice daily (prior to barium enema.)

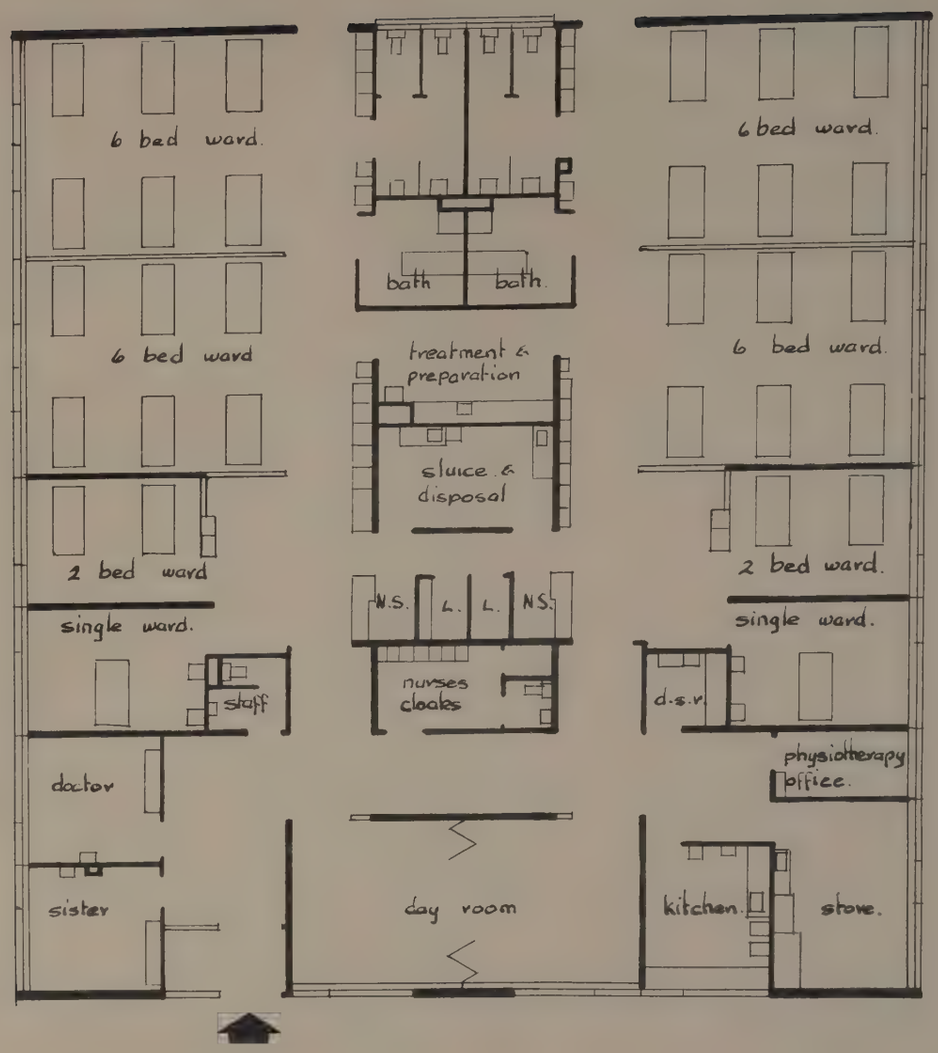
No.	Age	Condition	Treatment
18.	56	Tuberculosis of Kidney - Nephrectomy - Gross oedema - ? Involvement of second kidney	Patient totally helpless. Disorientated.
19.	24	Hyperthyroidism	In theatre during survey.
20.	75	Neoplasm of rectum - Excision of rectum - Deformity of legs	Rectal irrigation twice daily. 2 hourly packing to rectal wound.
21.	60	Retention of urine - Hemiplegia	Bladder irrigation twice daily. For theatre next day.
22.	52	Gastric perforation	2 hourly gastric aspiration. I.V. Therapy.
23.	83	Neoplasm of bowel - Sub-acute obstruction - Patient weighs 19 stones.	Rectal irrigation twice daily (prior to barium enema). Being prepared for operation. I.V. therapy. 2 hourly gastric aspiration. 2 hourly blood pressure recording.
24.	37	Urethral stricture Haematuria	Bladder lavage 4 hourly.
25.	67	Gastroenterostomy - Vagotomy	Hourly gastric aspiration. I.V. therapy. Hourly blood pressure and pulse recording.
26.	53	Anal fissure - Sphincterectomy	In theatre during survey.
27.	84	Retention of urine - Prostatectomy	Hourly bladder irrigation. Hourly blood pressure and pulse recording. Continuous drainage. I.V. therapy.
28.	38	Appendicitis	In theatre during survey.
29.	70	Old gastrectomy - ? Neoplasm of bowel	Rectal irrigation twice daily (prior to barium enema.)

DETAILS OF CASE LOAD

WARD 8 (WOMEN'S SURGICAL)

No.	Age	Condition	Treatment
1.	62	Gastric perforation - Repair of perforation - Retention of urine	Continuous gastric suction. I.V. therapy. Intermittent bladder drainage. Daily catheterization.
2.	59	Acute pancreatitis	Continuous gastric suction. I.V. therapy.
3.	61	Appendicectomy - ? Neoplasm of uterus	Continuous gastric suction. I.V. therapy.
4.	65	Melaena - Haematemesis - Gastro-enterostomy - Vagotomy	I.V. therapy. Continuous gastric suction.
5.	56	Neoplasm of breast - Mastectomy Hemiplegia - Diabetes - Retention of urine	Frequent dressings. Special diet. Intermittent bladder drainage.
6.	38	Gastro-enterostomy - Vagotomy	I.V. therapy. Continuous gastric suction.
7.	67	Haematemesis - Melaena	For investigation.
8.	78	Melaena	For investigation.
9.	78	Sub-acute obstruction	Daily enemata. For investigation.
10.	26	Abscess of breast	In theatre during survey.
11.	50	Duodenal ulcer	For investigation.
12.	70	Strangulated hernia	In theatre during survey.
13.	10	Strabismus	For theatre next day.
14.	79	Cataract	Both eyes bandaged.
15.	55	Eye infection	For transfer to Cameron Hospital.
16.	11	Strabismus	For dismissal.
17.	71	Cholecystitis	For investigation.
18.	64	Neoplasm of rectum	For theatre next day. Rectal irrigations twice daily.
19.	48	Thyroidectomy	No special treatment.
20.	42	Hyperparathyroidism	For investigation.
21.	77	? Neoplasm of pancreas Jaundice	For investigation.
22.	69	Neoplasm of bowel	Rectal irrigation twice daily (prior to barium enema).
23.	48	Melaena	For investigation.
24.	48	Neoplasm of breast - Mastectomy	In theatre during survey.

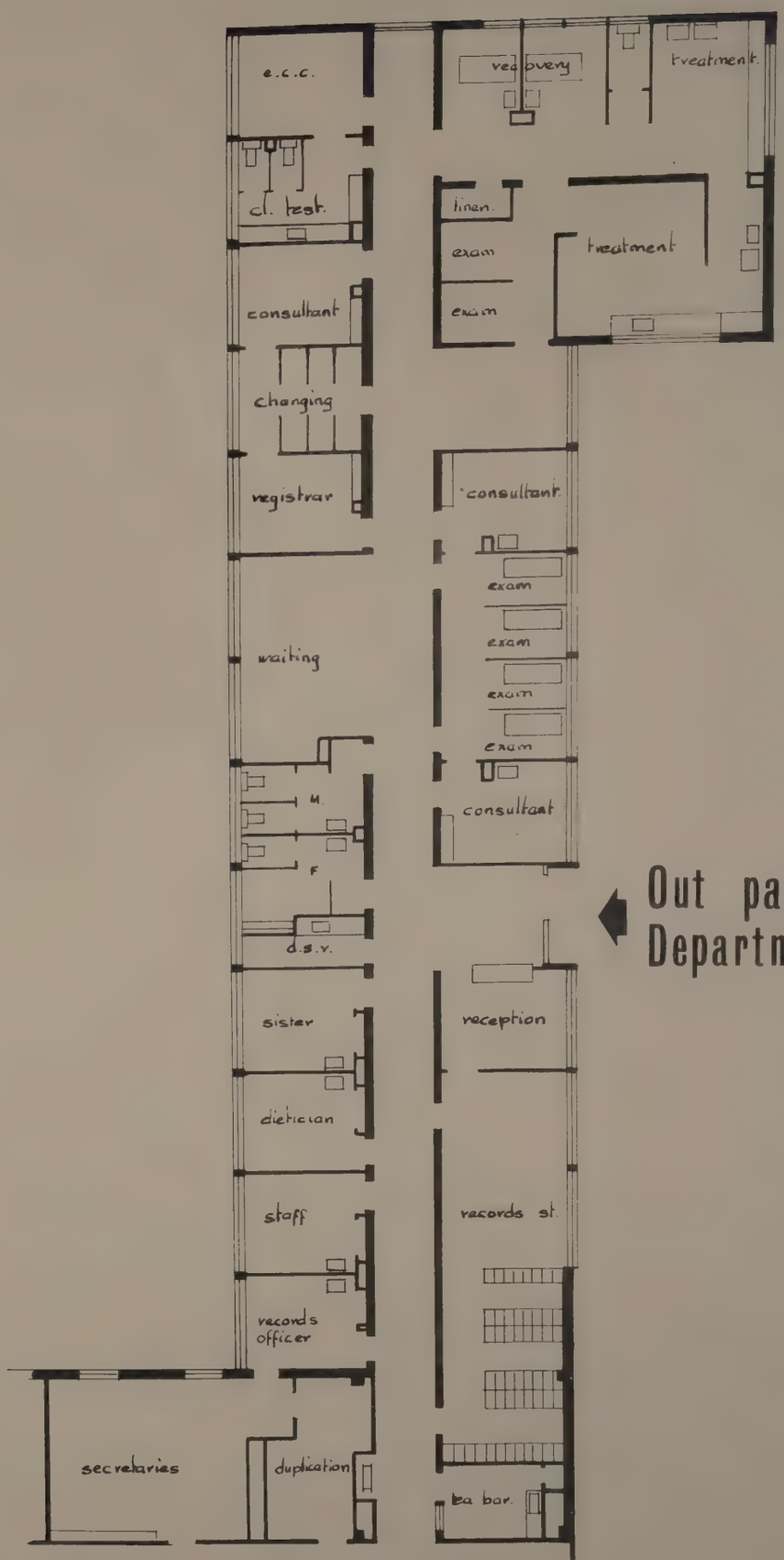
No.	Age	Condition	Treatment
25.	47	Pyloric stenosis	Admitted in a.m.
26.	54	Glaucoma	In theatre during survey.
27.	62	Neoplasm of rectum - Metastasis of kidneys	Terminal nursing care



Geriatric assessment unit

1/16 in : 1 ft

b	bath	Ph	physiotherapy office
Dr	doctor	S	sister's office
DR	day room	Sl	sluice
DSR	domestic service room	St	store (physio & O.T.)
K	kitchen	T	treatment room
L	linen	w	wash hand basin
NC	nurses' cloaks	wc	W.C.
NS	nurses' station		


e.c.c.
recovery
treatment
cl. test
linen
exam
exam
treatment
consultant
changing
registrar
consultant
exam
exam
exam
exam
waiting
M
F
consultant
d.s.v.
Out patients Department
sister
reception
dietician
staff
records st.
records officer
secretaries
duplication
tea bar

1/16 in : 1ft

PATIENTS SEEN AS CASUALTIES

The main accident and admission centre for Kirkcaldy is at the Kirkcaldy Orthopaedic Hospital, but patients requiring urgent attention or referred by general practitioners for admission "if considered necessary" are seen in the admission and theatre suite area of the out-patient department. If admitted, case records are made out in the usual way; if the patients are sent home after being seen by a consultant or are referred to the main "casualty" centre after "first aid", no records are kept except a register maintained by the nursing staff. From this register it was noted that in a period of seven months patients were seen with the following types of condition:-

Abscesses
Blisters
Bruises
Burns
Cement in eyes
Collapse (after a barium meal)
Concussion
Cuts
Dog Bites
Dressings
Drunk
Earache
Epistaxis
Enteritis
Foreign body in eyes
Foreign body in nostrils
Fish hooks in fingers
Fractures
Haematuria
Menorrhagia
Paraphimosis
Poisoning
Sore Throat
Sprains
Steel wool in fingers

OPERATIONS ON OUT-PATIENTS

The following information was extracted from records maintained by the nursing staff.

Total out-patient operations 1961	233
Total out-patient operations 1962	239

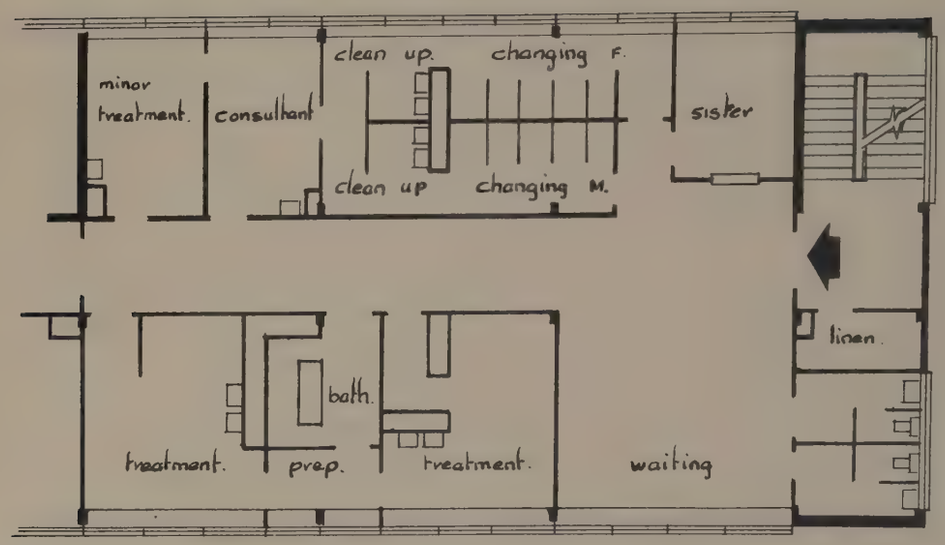
Further details for 1961

Number of days operating theatre in use	78
Largest number of operations in one day	8 (3 times)
Smallest number of operations in one day	1 (30 times)
Number of patients for whom anaesthetist present	82
Number of specimens sent to the laboratory .. .. (swabs and biopsy material)	37
Number of cases from wards 2 from ward 8, 2 from ward 6: all with abscesses	4
Number of cases admitted to wards	3

The operations on 233 patients in 1961 included:-

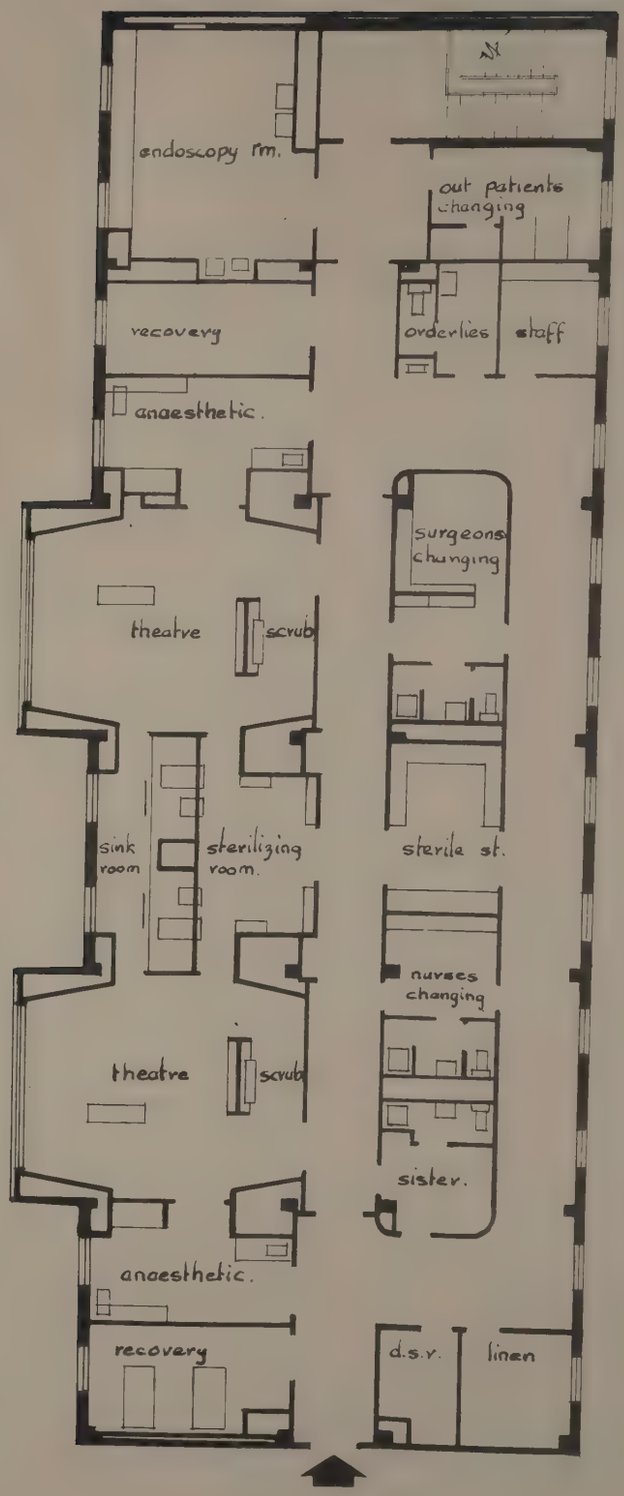
Cysts	44
Stretching prepuce and circumcision	33
Abscesses	32

Biopsies	25
Removal of nails	18
Bouginage	13
Varicose veins	13
Hydrocele (aspiration)	10
Simple tumours (lipoma, fibroma, papilloma)	9
Stretching anal sphincter	7
Ganglions	6
Diathermy	5
Manipulations (mainly nasal bones)	5
Dressings	2
Lumbar punctures	2
Injection of nerves	2
Paracentesis	1
Dilatation of parotid duct	1
Haemorrhoids	1
Anal polyp	1
Dilatation of vagina	1
Plaster of Paris application	1
Ulcer	1
	233



Dermatology

1/16 in : 1ft



Operating theatre suite

1/16 in : 1ft

X-RAY SURVEY CARD

X-RAY DEPARTMENT

Please give this card to each member of staff who deals with you to-day. Return this card to Receptionist before you leave the Department.

NAME DATE

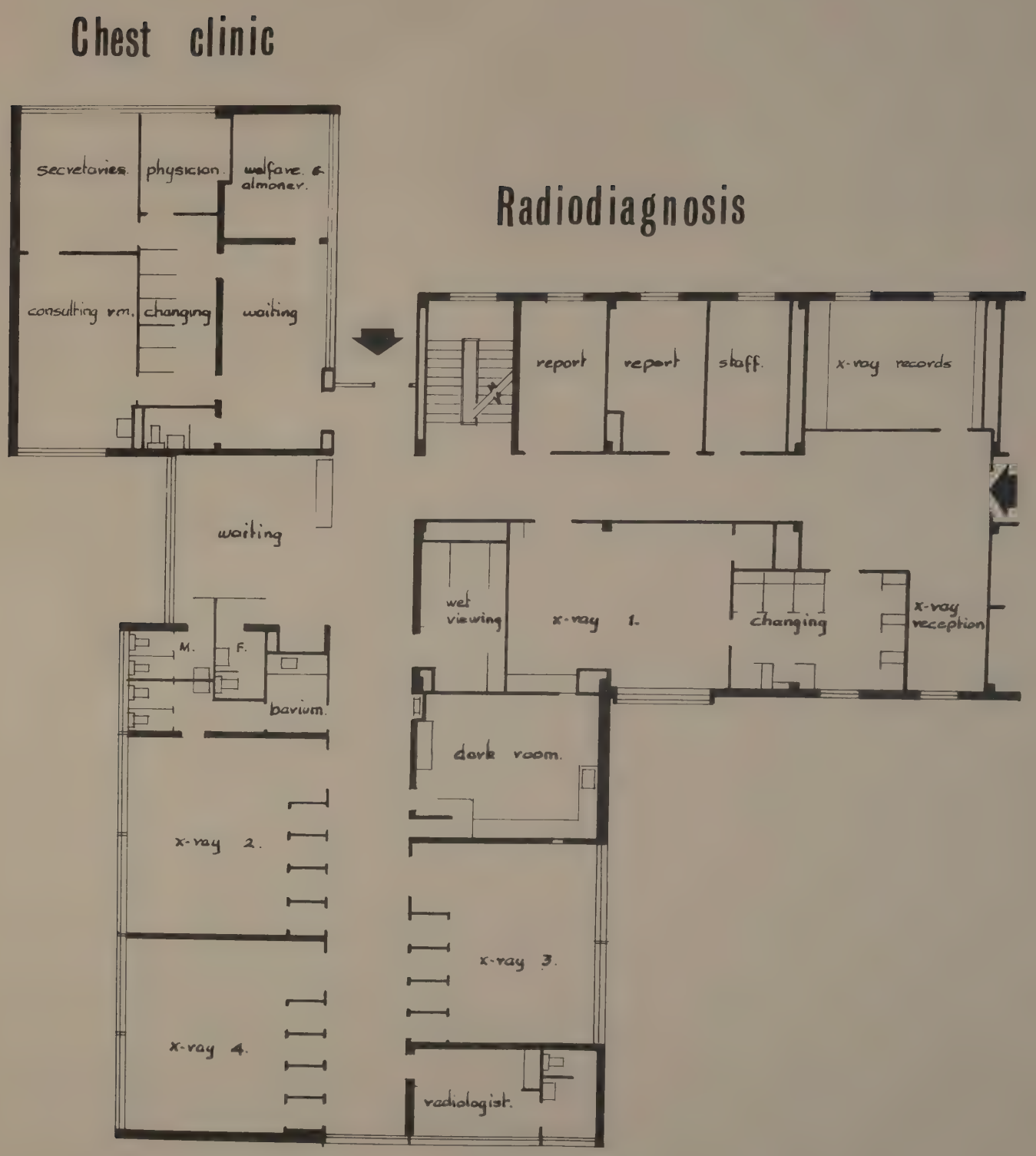
No.

	PLACE	TIME
1. In-Patient Out-Patient		
2. Ambulant Wheelchair Trolley		
3. Ambulance		
4. No. of companions		
5. Skull Trunk Chest Abdomen Limbs		
6. Straight X-Ray Barium " Tetra " I.V.P. " Retrograde "		
7. Machine 1 2 3 4 5 6		
	LEAVES	

KEY

R - Reception
R.W. - Reception Waiting Area
G.W. - General Waiting Area
Cl.W. - Clinic Waiting Area
C.W. - Corridor Waiting Areas
X1 - X-Ray Room 1
X2 - " " 2
X3 - " " 3
X4 - " " 4

C.X.1 - Cubicles Room 1
C.X.2 - " " 2
C.X.3 - " " 3
C.X.4 - " " 4
C.C. - " Chest Clinic
Con. - Consulting Room
W.C. - W.C.


Chest clinic
secretaries.
physician.
welfare & almoner.
consulting rm.
changing
waiting
waiting
M.
F.
barium.
x-ray 2.
x-ray 4.
Radiodiagnosis
report
report
staff.
x-ray records
wet viewing
x-ray 1.
changing
x-ray reception
dark room.
x-ray 3.
radiologist.

1/16 in : 1ft

DETAILS OF A SURVEY CARRIED OUT IN THE RADIODIAGNOSTIC DEPARTMENT

Days of study

1. The study was carried out on -

Monday	26th March
Tuesday	13th February
Wednesday	7th March
Thursday	1st March
Friday	6th April

2. The number of patients X-rayed each day is given in Table 1. As some patients - especially in-patients - made more than one visit in the day, the total number is shown in the second column.

Table 1

Day	*Number of Patients*	*Number of visits for X-ray*
Monday	103	104
Tuesday	57	64
Wednesday	69	71
Thursday	80	84
Friday	100	102
Totals for five days	409	425

3. These loads could be considered average although greater loads are experienced on some days.

4. The daily load of patients can fluctuate considerably - for the survey days the numbers ranged from 57 to 103 (1 to 1.8) - but the use of X-ray machines was slightly less variable - from 687 to 1,138 minutes (1 to 1.65).

Day	*Total work in all rooms Minutes*
Monday	1,138
Tuesday	848
Wednesday	756
Thursday	687
Friday	754
Total	4,183

5. The loads expressed in terms of numbers of patients and minutes of machine use can be seen in Figure 1.

6. It is noteworthy that Monday is the peak day on both counts, but on the other days, the numbers of patients and minutes of machine-use taken together give a more balanced load. If the Monday studied was typical, an effort might be made to transfer booked cases to a less heavily loaded day.

figure (1)

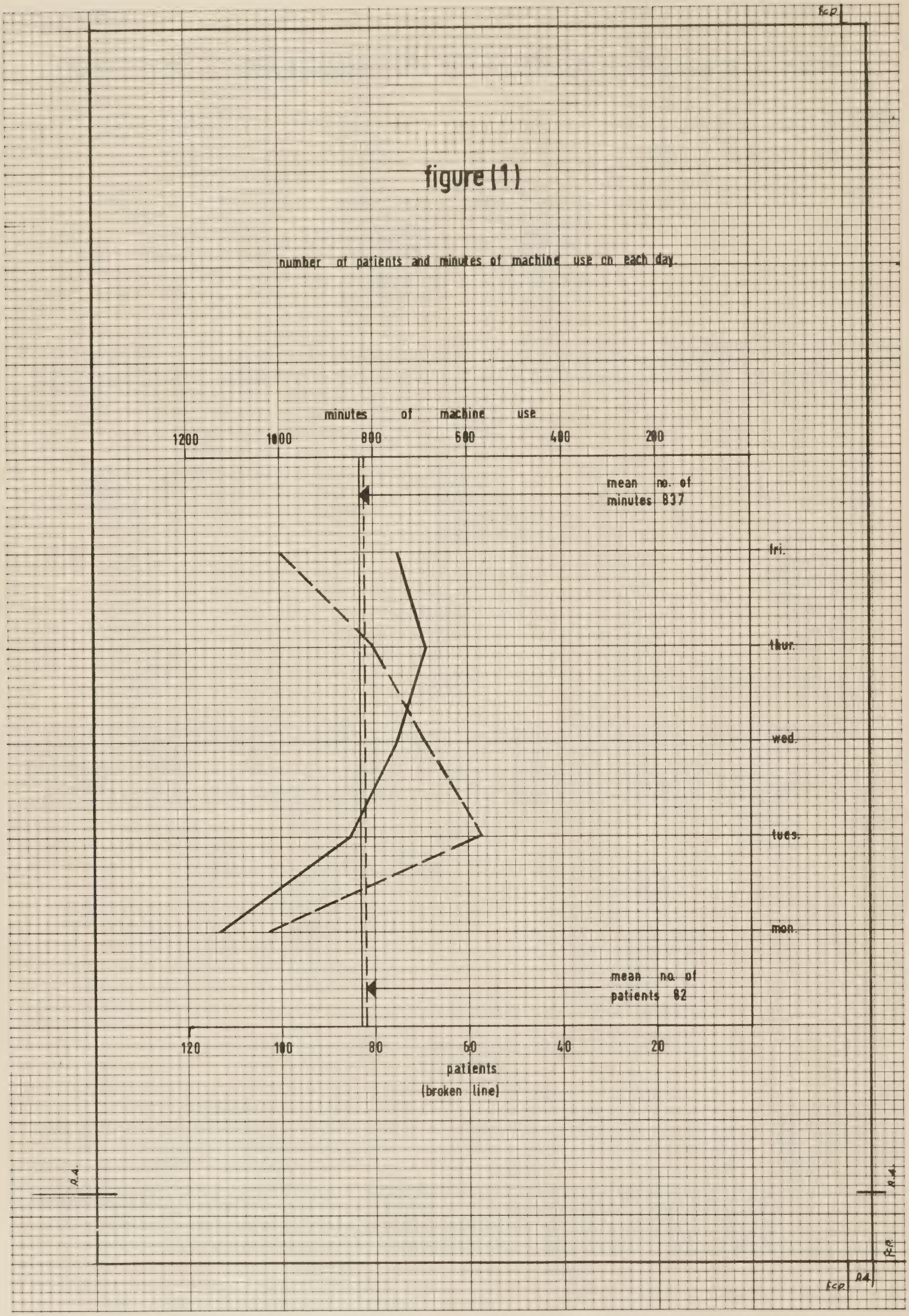
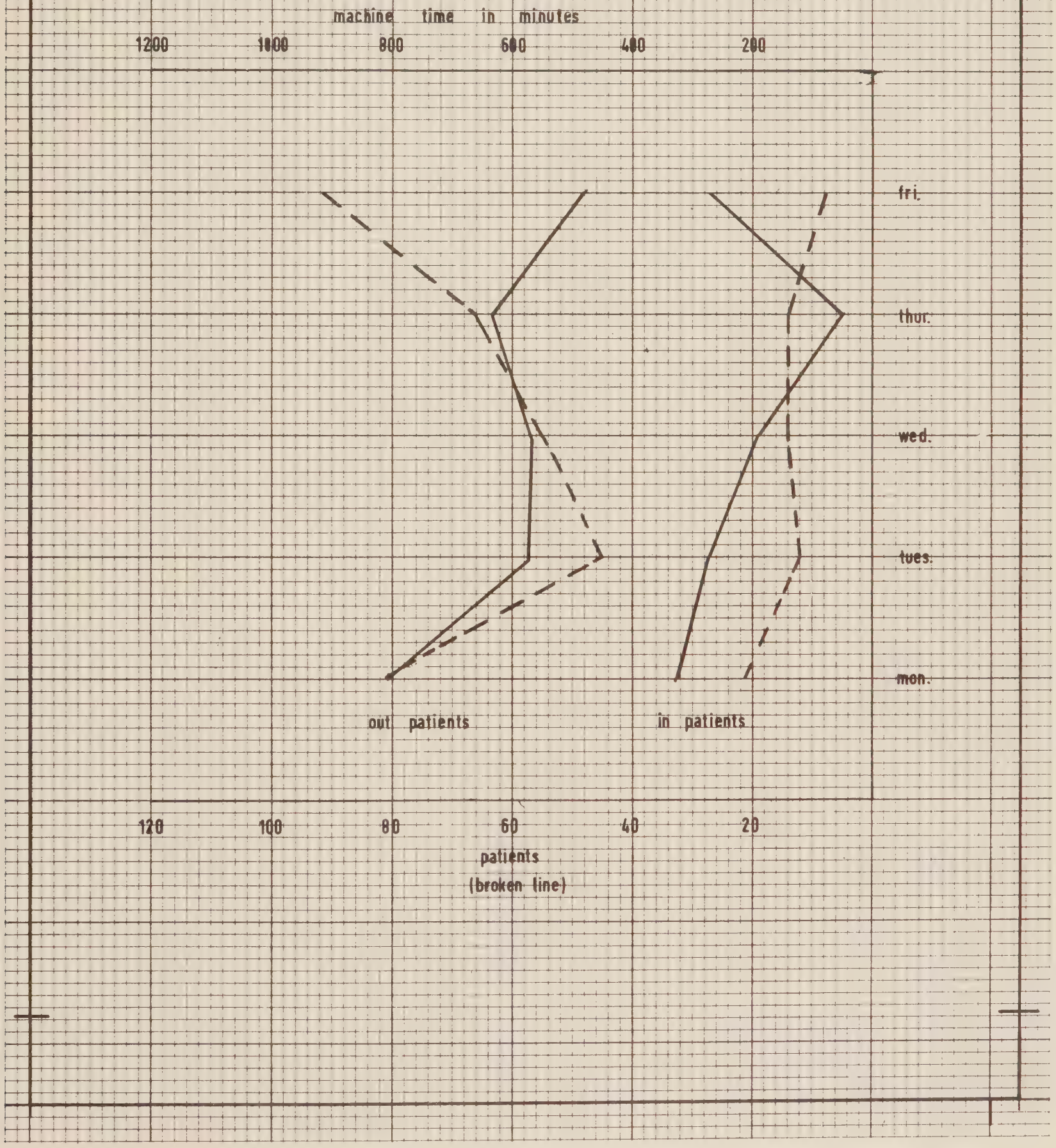

number of patients and minutes of machine use on each day.
minutes of machine use
1200
1000
800
600
400
200
mean no. of minutes 837
fri.
thur.
wed.
tues.
mon.
mean no. of patients 82
120
100
80
60
40
20
patients (broken line)

figure (2)

numbers of in-patients and out-patients and minutes of machine use on each day



Types of patient

7. The patients were divided as follows into in-patients (i.e. those from the Victoria Hospital itself) and out-patients.

Table 2

Day	*I.P.*	*Percentage*	*O.P.*	*Percentage*	*Total*
Monday	21	20	82	80	103
Tuesday	12	21	45	79	57
Wednesday	14	20	55	80	69
Thursday	14	19	66	81	80
Friday	8	8	92	92	100
All days	69	17	340	83	409

8. On every day except Friday, in-patients were about one-fifth of the total number X-rayed; 91 (30%) of the in-patients and 175 (52%) of the out-patients had appointments.

9. The time for which X-ray rooms were occupied by in-patients and out-patients on the respective days is shown in Table 3.

Table 3

	In-Patients		*Out-Patients*		*Total*
Day	*Minutes*	*Percentage*	*Minutes*	*Percentage*	*Minutes*
Monday	325	29	813	71	1,138
Tuesday	276	33	572	67	848
Wednesday	192	25	564	75	756
Thursday	50	7	637	93	687
Friday	267*	35	487	65	754
All days	1,110	26	3,073	74	4,183

*Includes 1 x 125 minutes

10. Generally speaking, about a fifth of patients X-rayed were in-patients, and they take up a quarter of the time on the machines. The information given in the two preceding tables is presented as a graph in Figure 2.

11. A note was kept of the number of patients who were ambulant, were on wheel chairs or trolleys or who were accompanied by a companion. Table 4 gives the totals.

Table 4

	I/P	*O/P*	*Total*
No. of Patients	69	340	409
Ambulant	30	328	358
Wheelchair	21	4	25
Trolley	15	7	22
Carried	3	1	4
No. arriving by Ambulance	-	27	27
Without Companions	55	251	306
With 1 companion	-	78	78
With 2 companions	-	11	11
With 1 staff	13	-	13
With 2 staff	1	-	1
	132		

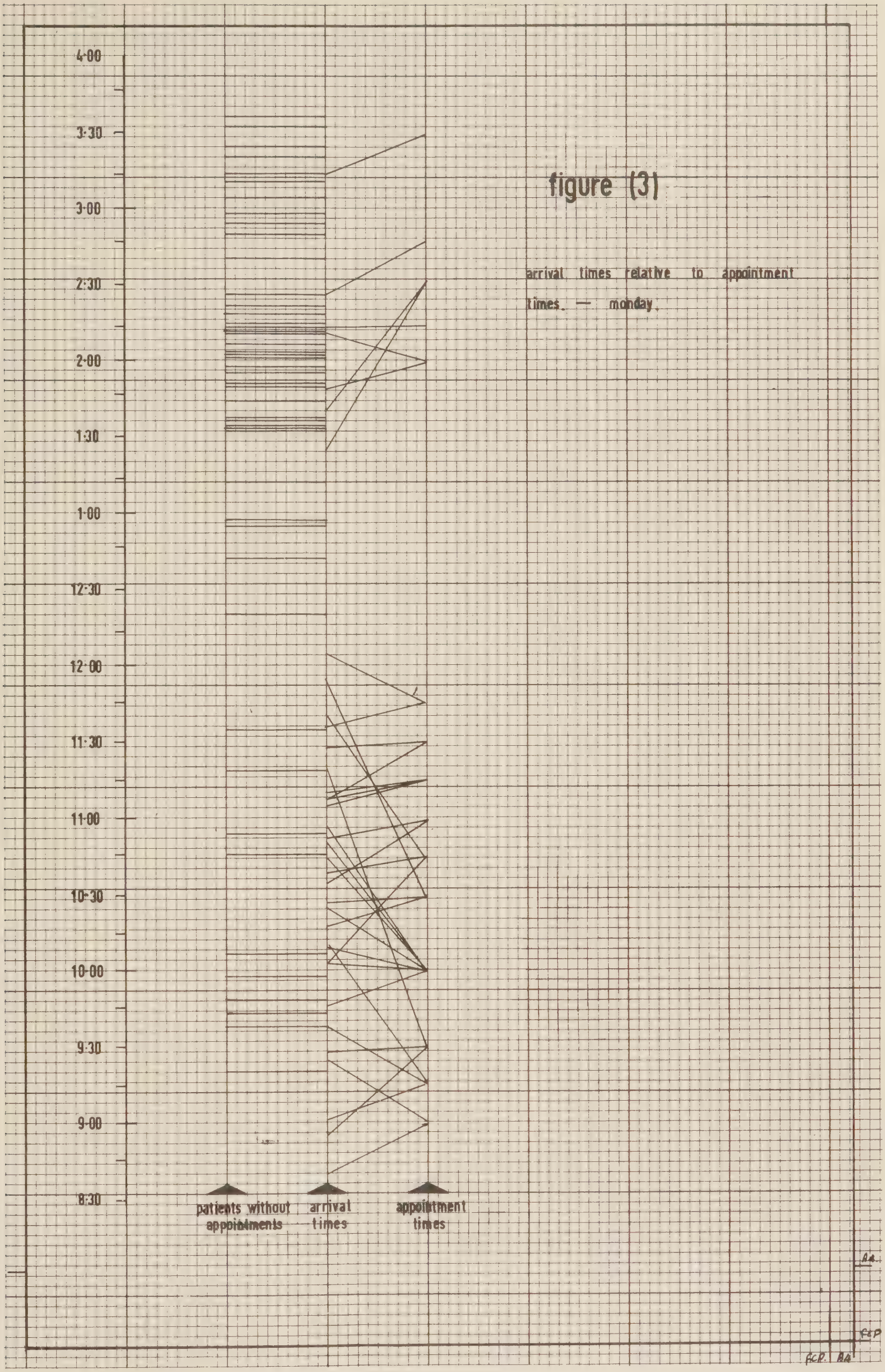


figure (3)

arrival times relative to appointment times. — monday.

Patients with appointments

12. Only 30 per cent of the in-patients, but 52 per cent of the out-patients, had appointments. The Nuffield survey* suggests that there are advantages in booking appointments for as large a proportion of the load as possible; while these percentages seem, prima facie, to compare favourably with those of most of the departments in the Nuffield survey, the absence of a casualty department at Kirkcaldy reduces the number of patients whose arrival cannot be planned or closely predicted. The Nuffield report expresses the hope that more patients than found in the survey would have appointments and that the appointment system should be devised with some recognition of the variable load coming from casualty departments and out-patient clinics etc. This can be done by reserving shadow appointments for a frequently occurring incidence of patients from each particular clinic.

13. Figure 3 shows for those with appointments for the Monday, actual arrival times, relative to appointment times throughout the day. In the morning, 10 appointment times were given to 31 patients in all; six times were for three people each and one was for seven people. The variable unpunctuality of patients however, converted this broad appointments system into a fairly even flow of arrivals of patients with appointments, of whom only 13 arrived within four minutes of any other such patient; and only twice were there three such patients arriving within four minutes of each other. On the other hand, four in-patients without appointments arrived within the space of four minutes. The afternoon pattern is one of steady, fairly frequent arrivals of patients without appointment - many of them from clinics. There is a clear thinning of arrivals after 2.30 p.m. and no arrival after about 3.40 p.m. Since (see paragraph 18) 75% of patients are dealt with from start to finish in less than an hour, there was, even on this busiest day, spare capacity in the latter part of the afternoon.

14. The punctuality of patients with appointments is shown in Figure 4. The spread of the graph is broadly typical, with patients on average four minutes early but a few an hour or more early (8 patients), or late (10 patients). One hundred and twenty (61%) were early and seventy (36%) late; and one hundred and twenty-one (62%) arrived no more than twenty minutes early or no more than ten minutes late.

15. An analysis of all those patients who were late and those more than thirty minutes early is made in Table 5.

Table 5

Patients with Appointments

All those late			*Those over 30 minutes early*		
I.P.	*O.P.*	*Arrived by Ambulance*	*I.P.*	*O.P.*	*Arrived by Ambulance*
6	16	(0)	-	-	
-	4	(1)	-	-	
2	9	(0)	-	2	(9)
4	18	(0)	-	8	(0)
2	12	(2)	1	3	(0)
14	59	(3)	1	13	(0)

Figures in brackets show out-patients who arrived by ambulance.

16. Only 27 of the out-patients (8%) arrived by ambulance, and no more than 3 (11% of those arriving by ambulance and 0.9% of all out-patients) were late. There was no evidence, therefore, that the ambulance service is responsible for an undue amount of unpunctuality. But 14 out of 69 in-patients (20% of them) were late.

* Towards a clearer view: the organisation of diagnostic X-ray departments: Nuffield Provincial Hospitals Trust, London, O.U.P., 1962. Price 7/6d.

figure (4)

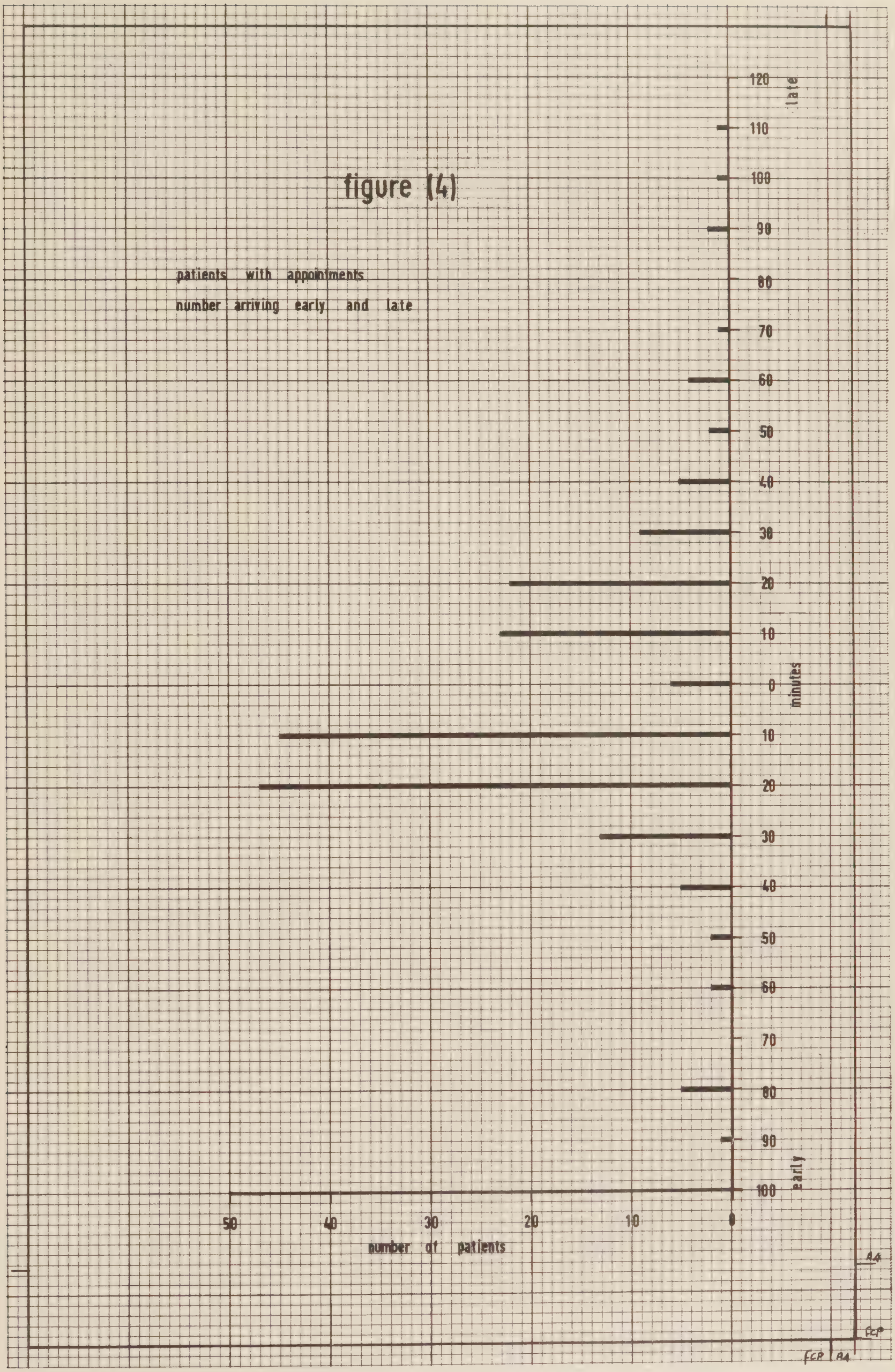
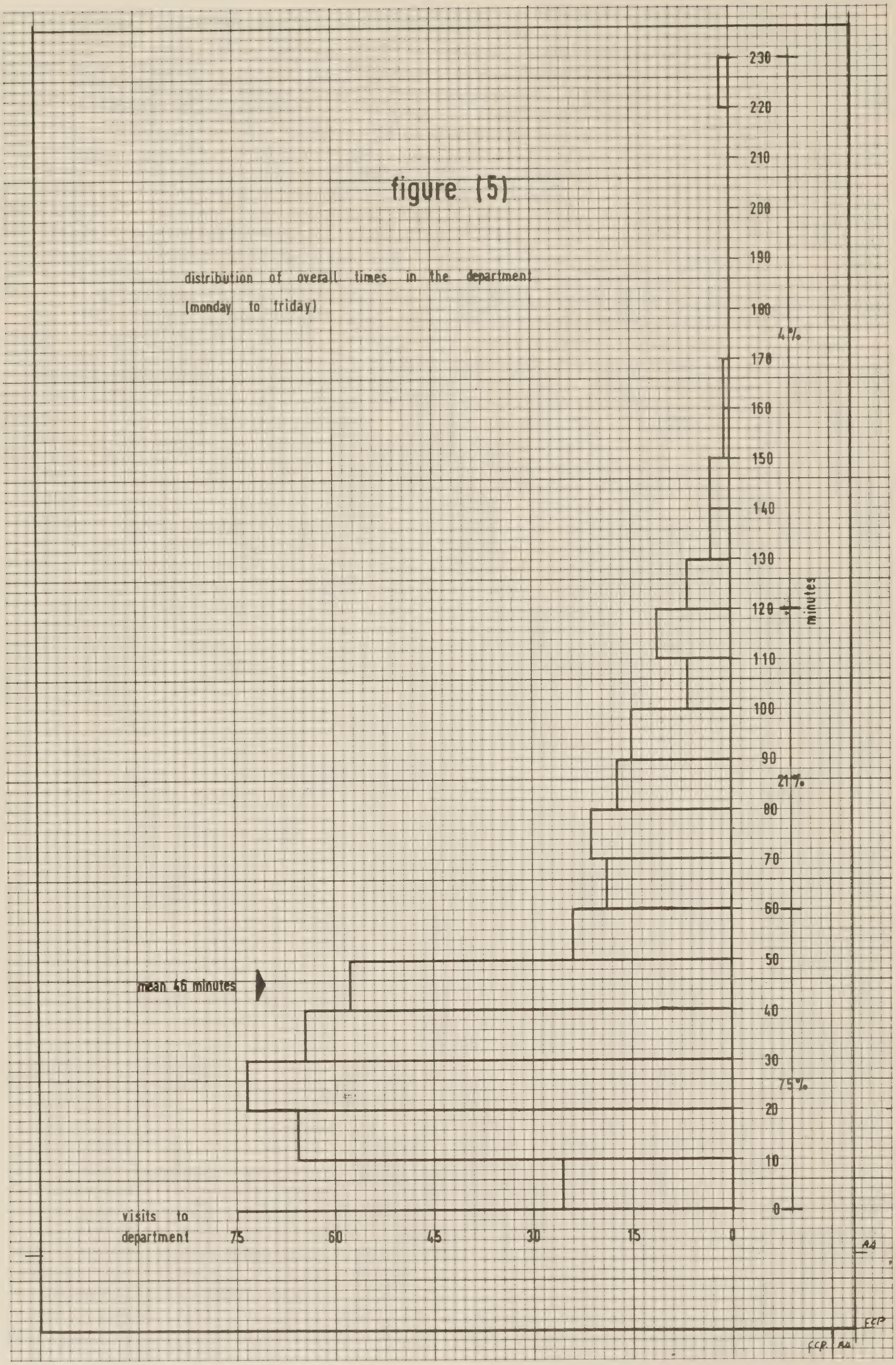

patients with appointments
number arriving early and late
120
110
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
late
minutes
early
50
40
30
20
10
0
number of patients
A4
FCP
FCP
A4

figure (5)

distribution of overall times in the department
(monday to friday)



17. Despite the inevitable spread of the arrival times, an appointments system can be contrived to give a more even distribution of load; the unpunctuality pattern must be accepted, but, other things being equal, the appointments system should be honoured to the extent of dealing, in the order of their appointments, with those patients who have arrived.

Times spent by patients in department

18. A measure of efficiency from the patient's point of view is how long he spends in the department; and the length of his visit ought to bear some reasonable relationship to the time it takes to X-ray him. Figure 5 shows the distribution of overall times for which patients were in the department. The mean time was 46 minutes per visit, but 75% of the patients were dealt with in an hour or less and 96% in under two hours. The average time spent in X-ray rooms per visit to the department was over 10 minutes and the mean time per visit to the department was 46 minutes. Since some patients made more than one visit in the day, the mean time per patient was 48 minutes. 235 or 55% of visits were completed in forty minutes or less.

Patients' waiting times

19. Waiting time is probably the most tedious period for the patient and the cause of most complaint, and it is useful to examine this so far as possible. There are, however, some cautionary points to be made. For one thing, the survey data is not necessarily complete as regards waiting, because there was undoubtedly an element of waiting in the cubicles after patients had undressed (or dressed) and this is not distinguished in the recorded data. Waiting times used in this report, therefore, tend to be on the conservative side. Secondly, it does not follow that a department in which there is little waiting is necessarily an efficient one in the fullest sense; it may be an underworked department.

20. Waiting time is a reasonable index for the patient, and it should be kept short; but a reasonable balance must be kept between waiting by patients and waiting by staff.

21. In an X-ray department, or in any service, which has a variable "service time", the patient's (or customer's) waiting time can be minimised by having a sufficient number of "service channels" or, in this case, radiographers and X-ray rooms. But this could be wasteful of equipment and staff. On the other hand, a shortage of equipment and staff could cause long waits for patients; but so could a bunching of the load even if, overall, the load was relatively light.

22. At Kirkcaldy, by such standards of comparison as exist, the load is not unduly heavy in relation to the staff and number of X-ray rooms. (This is discussed in later paragraphs). The waiting times experienced are not, therefore, a product of an over-all inadequacy of facilities. Long waiting times are sometimes a product of a bunching of the load, particularly that part of it requiring special facilities; but there are indications that the general waiting times experienced derive from the methods of ushering and handling patients, and any difficulties in doing this caused by the layout of the department. If there were to be a greater utilisation of rooms, i.e., if the staff and rooms were to come under greater pressure, the patients' waiting times would be likely to increase unless the handling of patients, i.e., their general progress through the department apart from X-ray time, could be speeded up.

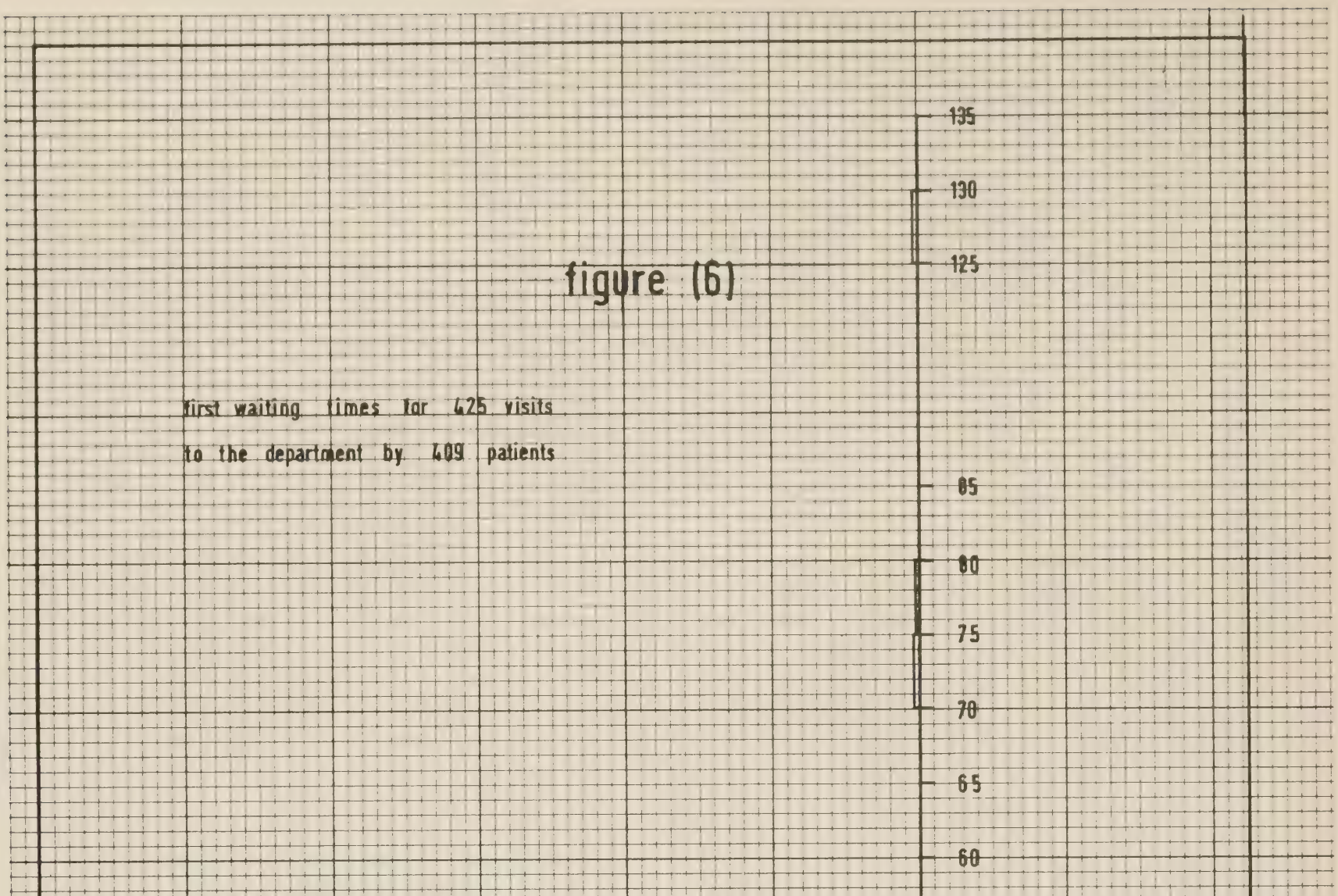
23. Figure 6 shows the distribution of initial waiting time, i.e., between the patient's time of arrival and the time he is taken to the X-ray room or changing cubicle. Patients waited less than five minutes on nearly half their visits and less than 15 minutes for 86% of the visits. This leaves some 60 visits (14 per cent) where the initial wait was more than a quarter of an hour - sometimes more than an hour. The average initial wait was just over 9 minutes. In-patients, in fact, had to wait longer than out-patients - an average of 13½ minutes compared with 8.3 minutes for out-patients - but this discrepancy is partly accounted for by long waits by three in-patients (see paragraph 25 below).

24. The causes of waiting may vary, - e.g.

(a) very early arrival for appointment;
(b) non-availability of special rooms or machine;
(c) non-availability of radiologists;

figure (6)

first waiting times for 425 visits
to the department by 409 patients



(d) non-availability of radiographer;
(e) cumulative delays in ushering and progressing;

25. The longest initial waiting times were -

(a) I.P. 10.17 a.m. - 11.29 a.m. on Tuesday (72 minutes)
(b) I.P. 12.04 p.m. - 1.16 p.m. on Thursday (72 minutes)
(c) I.P. 12.04 p.m. - 1.22 p.m. on Thursday (78 minutes)
(d) O.P. 12.24 p.m. - 2.31 p.m. on Friday (127 minutes)

Three of these long initial waits were around lunch-time, but three were by in-patients for whom such long waits seem neither necessary nor desirable.

Intermediate waiting times

26. Apart from initial waiting and waiting at the end of the visit, some patients have to wait during the visit - to see, for example, whether a second X-ray is necessary. This waiting may be either outwith the X-ray rooms and cubicles and so be recorded as waiting, or within cubicles and recorded as cubicle time. 84 instances of waiting outwith cubicles were recorded and averaged 20 minutes for these occasions but only 4 minutes over all visits. These instances were mainly by patients who did not need to undress. There was also some intermediate waiting in cubicles by patients who needed to undress. This intermediate cubicle time was recorded on 77 occasions and averaged 11 minutes on these occasions but only 2 minutes over all visits.

Final waiting times

27. The same distinction arises for time spent in the department on conclusion of the final X-ray. Some of the patients who do not undress may have to wait while, for example, the film is developed and checked: they do this in the waiting area and are recorded as waiting. Equally, some patients who undress and use a cubicle may have to wait, but they tend to do this in the cubicle. Final waiting time outwith the cubicles averaged 8.3 minutes. Only just over half the patients waited in this way and the average was 17 minutes for those who did so wait.

28. More than half (113) experienced final waiting time both in a cubicle and in the waiting area.

Comparison with Nuffield standards for waiting

29. The Nuffield report suggests that reasonable "waits" for patients are -

	Patients undressing	*Patients not undressing*
Wait before	9	5
Wait after	20	14
Total wait	29	19

(These times assume 12 minutes for processing films and two minutes for checking and include for registration, ushering, etc.)

30. Since at Kirkcaldy the average time spent in an X-ray room per visit to the Department was 9.8 minutes and the average overall time in the department per visit was 46 minutes, the average difference - which is almost entirely waiting time - was about 36 minutes.

31. The average waiting times were therefore appreciably higher than the Nuffield targets.

32. Again, taking the Nuffield target "waits" plus the average time in an X-ray room at Kirkcaldy, targets for over-all time in the department might be 26½ minutes for patients not undressing and 36½ minutes for those who do: this compares with the actual overall average of 46 minutes.

33. The average initial wait of just over 9 minutes compares with the 5 minutes regarded as ample by Nuffield for all processes up to the patients being shown into the X-ray room if not undressing. At Kirkcaldy, the initial waiting time does not include time spent in undressing cubicles.

34. As for final waiting times, i.e., time in department after film taken, the Nuffield target is 14 minutes (or 20 minutes for those who have to dress). These target times would appear to be reasonably generous by comparison with what was experienced at Kirkcaldy where the average per visit of all times after X-ray was 14 minutes. But for 57 visits, no time after X-ray was spent either in a cubicle or in the waiting room area, so that the average for the remaining visits was just over 16 minutes. The figures show that patients are not on average being kept unduly long in the department after X-ray.

Overall time in department for out-patients and in-patients

35. The overall time in the department has been illustrated in Figure 5 and the mean time is forty-six minutes per visit. A further analysis of overall times in the department shows -

	per Visit	*Per Patient*
	Mins.	*Mins.*
Out-patients	46	47
In-patients	48	54

A number of in-patients made more than one visit per day to the department and this accounts for the average difference of 6 minutes between time per visit and time per patient.

Table 6

Average time for a visit to X-ray department, by type of X-ray

	Number of Patients	*Percentage*	*Time in Minutes per patient*
Patients having only straight	328	83	40
Only barium X-ray	37	9.3	72
Only Tetra	6	1.5	126
Only I.V.P.	10	2.5	117
Straight and barium	15	3.7	97

36. As might be predicted, the difference in times between patients having straight X-rays and the rest is very marked, and this difference is even greater when the times per visit to X-ray rooms are examined in the next table -

Table 7

Average times for a visit to X-ray room, by type of X-ray

Type of X-ray	*Number of visits*	*Percentage*	*Time in Minutes*
Straight	449	83.5	4
Barium	68	12.6	14
Tetra	7	1.3	29
I.V.P.	14	2.6	78

37. The following table indicates what proportion of their visit is spent in the X-ray room -

Table 8

Type of X-ray	*Time in X-ray Room*	*Time in Department*	*Difference*	*Percentage Time in X-ray Room*
Straight	4	40	34	10
Barium	14	72	58	19.5
Tetra	29	126	97	23
I.V.P.	78	117	39	66

38. It will be seen from this table that the patient having a straight X-ray does not retain his proportionate advantage of a much shorter X-ray time when the overall stay in the department is considered. This is because he still has to go through a number of stages (some are virtually irreducible) which bulk large relative to the X-ray time. There is undressing and dressing which may together account for up to eleven minutes according to the Nuffield Report, and waiting for films to be processed and checked which might take fourteen minutes. For patients having straight X-rays the Nuffield target time (see paragraph 29 above) would be 19 plus 4 minutes or 23 minutes for those not needing to undress, and 29 plus 4 or 33 minutes for those undressing. The average time at Kirkcaldy was longer by 17 and 7 minutes respectively. The waiting time after X-ray will be reduced when automatic developing is available with perhaps a seven minutes processing time. It should then be a perfectly practicable aim to deal with patients requiring straight X-ray in well under half an hour on average.

39. Where patients have more than one visit to the X-ray room per visit to the department the time goes up, as might be expected. A simplification of the figures suggests that for two visits to an X-ray room the time is a little over an hour, and that about an extra half hour in the department may be expected for each extra X-ray. See Figure 7.

Use of rooms

40. One of the important points as regards the planning and equipping of X-ray departments is the use made of rooms and machines. The use made of radiographers is another essential point, but this aspect was not, as already explained, dealt with in this study. At Kirkcaldy, the time for which rooms were occupied by patients amounted to about 70 hours in the five days.

41. Figure 8 shows the percentage use of each X-ray room each day and also the average use for the whole five days. From this alone it will be seen that Room I although intensively used (58.5%) on the Monday was under used for the rest of the week and achieved an average of only 30%. On the other hand, on the Tuesday, Room IV was 77% utilised and achieved the highest average of all - 52.5%. It was, of course, used for long examinations, and the calculations assume no overlapping of patient's times in the room although in fact on the busy day there was 2 hours overlap. The use of Room II fluctuated considerably (from 69.5% to 30%). The use of Room III was more regular than that of the rest.

42. Room occupancy rates (examination time as a percentage of available time) for each department in the Nuffield survey varied from about 30% to 50%. These are average rates and the survey shows that at one hospital the average occupancy rate was 58% for all rooms in one eight-hour day. Having regard to improvements in use which might derive from other recommendations, the Nuffield report suggests that a seventy per cent occupancy rate (in the daily eight hours on five days a week) should be aimed at and should be used for calculating the number of X-ray rooms required.

43. The average usage at Kirkcaldy (43.5%) is about the mean of the departments studied by Nuffield. The 70% occupancy rate suggested by Nuffield would give 112 available hours for four rooms in a 40-hour week. Actual use in the five days was 70 hours. Three rooms would, on this basis, have been sufficient for the work done: they would have been just under 60% utilised.

44. Figure 9 shows the percentage use of all rooms each day and this again brings out that the Monday was the busiest day with rooms used for 59 per cent of the time. For the remaining days the usage was less than 40 per cent except for the Tuesday (44 per cent.)

figure (7)

mean time in department for patients making more than one visit to an x-ray room

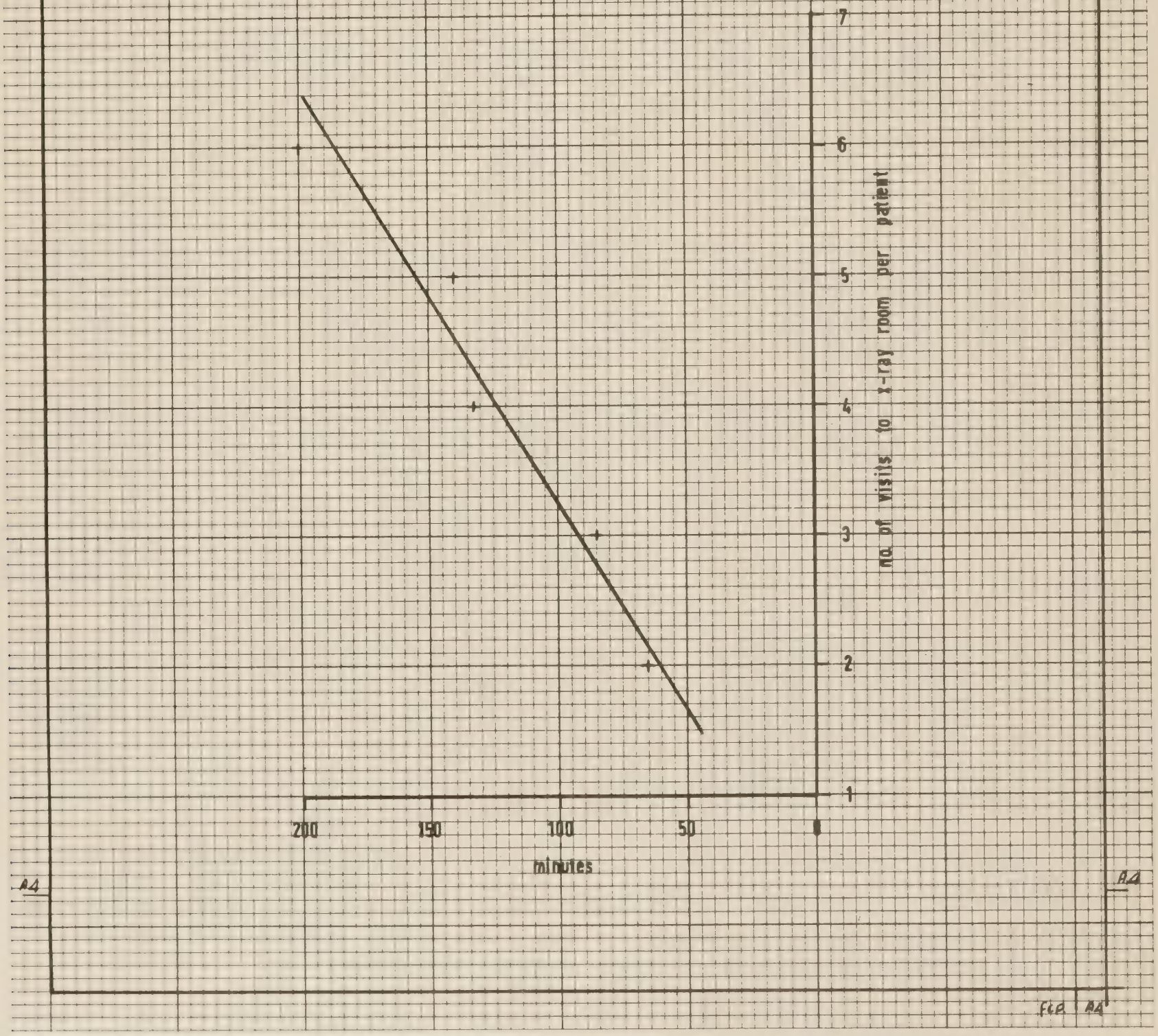


figure (8)

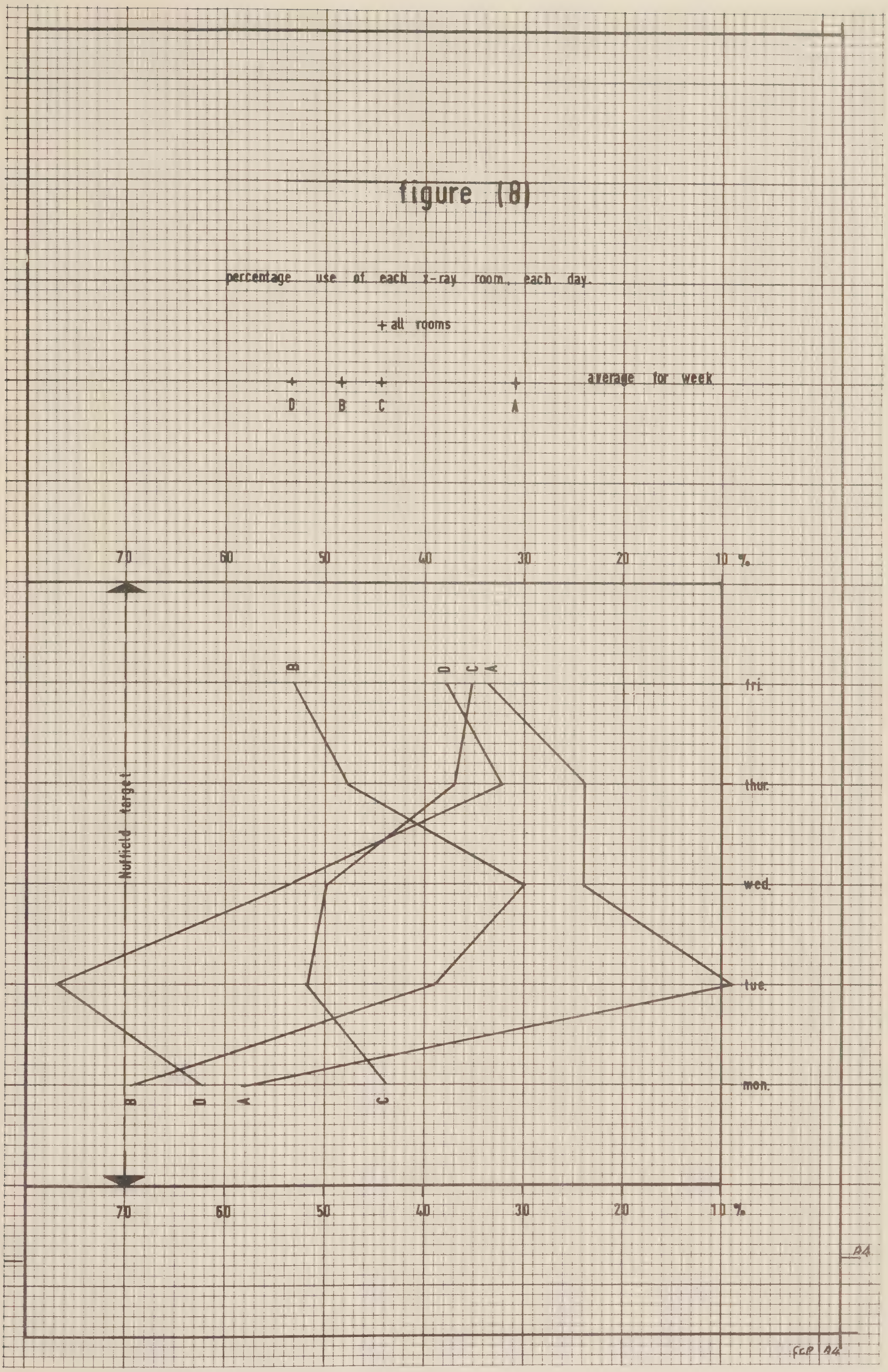

percentage use of each x-ray room, each day.
+ all rooms
average for week
D
B
C
A
70
60
50
40
30
20
10 %
Nuffield target
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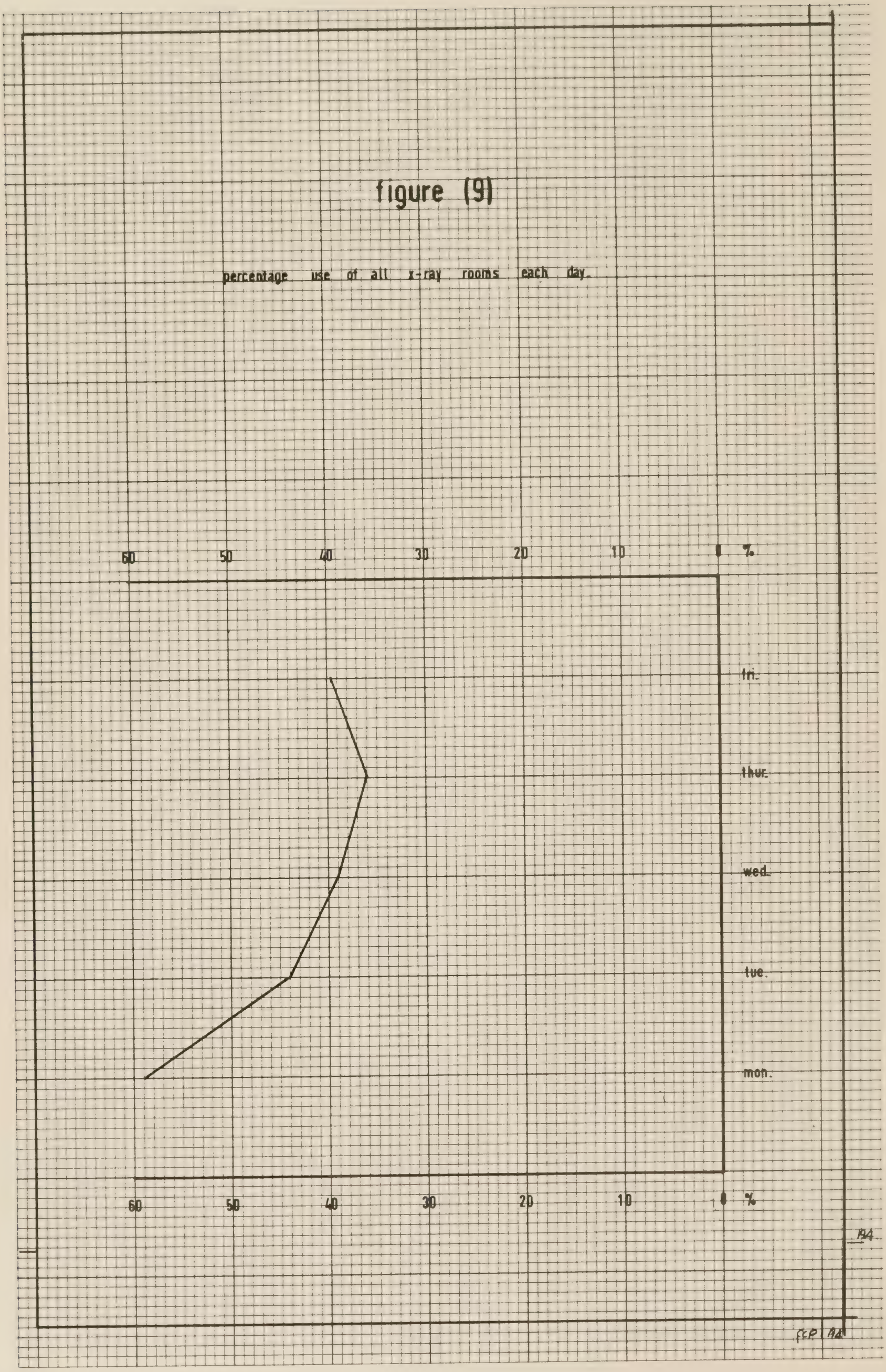
figure (9)

percentage use of all x-ray rooms each day.



45. If the Nuffield target of 70 per cent usage were to be achieved this would mean 112 hours usage or about 60 per cent more than was done during the survey period. Even if a 60 per cent usage were maintained (and this was almost achieved on the Monday) this would mean 38 per cent more work. There is, therefore, clearly a considerable amount of spare capacity at Kirkcaldy in terms of rooms; and this should be borne in mind in deciding how many additional rooms to equip in the extension to the department.

Use of machines

46. The respective use of the various types of machine determines the types which may suitably be grouped together in one room; some machines are multi-purpose while others (e.g. skull and dental machines) are restricted in their capabilities. Figure 10 lists the machines and indicates within broad categories what types of X-ray they are capable of doing: and Figure 11 analyses the types of X-rays done on each machine during the survey period.

Figure 10

X-RAY DEPARTMENT

Room	*Type of X-ray possible with machine*	*Machine*
Room I		*Machine 1*
	S.2, S.3, S.5, IVP and R	Watson R.6000. Overcouch Tube with Iontomat coupled for automatic chest exposures.
		Machine 2
	S.3	Watson Odelca. Mass-miniature camera - 100 cm. × 100 cm. size.
X-Ray Room II		*Machine 3*
	All except S.1	Philips Medio DLX. Over and undercouch tubes.
X-Ray Room III		*Machine 4*
	Dental	Philips Dental Unit.
		Machine 5
	All except B1 and 2	Watson R.IV. Overcouch Tube with Iontomat coupled for Bucky exposures.
		Machine 6
	S.1	Siemens Elema Schonander Skull Unit.
Room IV		*Machine 7*
	All except S.1	Philips Rotopulse for use with Symetrix I overcouch and under couch tubes.
		Machine 8
	S.3	Rotopulse for use with Danatomo Tomography Unit (Philips).

Portable Machines	
Surgical Wards	Philips DX5 motorised + Portables.
Medical Ward I	Philips Super Practix (Theatre) - Siemens Plerimobil wards.
Medical Ward III	Watson Mobilix (old).
Geriatric Wards 2CIV	Newton Victor p.3 (small) portable - old.

Type of X-ray	*Key*
Straight X-ray	
Skull	S.1
Trunk	S.2
Chest	S.3
Abdomen	S.4
Limbs	S.5
Barium	
Meal	B.1
Enema	B.2
Gallbladder	Tetra
Intravenous pyelogram	IVP
Retrograde pyelogram	R
Tomograph	Tomo

LIMBS

		SKULL		CHEST			ABDOMEN						LIMBS	TRUNK
		Straight	Ventric	Straight	Barium	Tomograph	Straight	Barium	Tetra.	I.V.P.	Screening	Tomograph	Straight	Straight
ROOM I	MACHINE 1			222			1						6	
	2			47										1
ROOM II	3	2			4		3	46	1	1	3			
ROOM III	4	11					6	1		2				3
	5	5		1			9	1	3	4			2	5
	6	13	2	1					1					
ROOM IV	7	2				2	17		3	6			4	13
	8	1				4	3		1	1		2	11	3

Figure 11

OFFICE ACCOMMODATION

The following table gives certain details of office accommodation. Common features are not detailed, e.g., free-standing radiators and lino tiled floors. "Normal office furniture and equipment" implies a desk and chair, with side chairs, internal and external telephones.

No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
GROUND FLOOR - EAST WING				
1.	Hospital Secretary	131 sq.ft. (1)	Normal office furniture and equipment 1 side table 1 book case 1 filing cabinet 1 small filing cabinet 1 carpet	Adequate size. Planned as assistant matron's office. No dictating point.
2.	Domestic Superintendent	107 sq.ft. (1)	Normal office furniture and equipment 1 filing cabinet 1 cupboard	Adequate size. Planned as store
3.	Pharmacist	72 sq.ft. (1)	Normal office furniture and equipment 2 filing cabinets 1 book shelf (high level)	Too small
4.	Porter	30 sq.ft. (1)	1 chair 1 cupboard containing fuses (recessed) 1 internal telephone 1 external telephone Observation window Writing top Shelved alcove	Adequate size as seldom used. A collecting point for laboratory specimens
5.	General Clerical Office	134 sq.ft. (2)	Normal office furniture and equipment 1 desk 1 table with machine for printing labels 1 metal cupboard 1 filing cabinet 1 wash hand basin with elbow taps and tiled surround 1 pigeonholed letter rack 1 Stool	Planned as examination/ admission room
6.	Matron's Secretary	94 sq.ft. (1)	Normal office furniture and equipment 2 filing cabinets 1 wash hand basin with tiled surround 1 metal cabinet 1 wall mirror	Adequate size. Planned as waiting room
7.	Assistant Matron	129 sq.ft. (1)	Normal office furniture and equipment 1 desk 2 metal cabinets 1 chest of drawers	Adequate size. Planned as clerical office. Second desk used by night sister.

No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
8.	Matron	138 sq.ft. (1)	Normal office furniture and equipment 1 table 1 side table 3 filing cabinets 1 wall cabinet 2 recessed cupboards under shelving 1 carpet Recessed glass fronted shelving Fitted drawers Adjacent toilet	Floor space restricted by filing cabinets
9.	Admin.	224 sq.ft. plus recess of 22 sq.ft. with shelving (2)	Normal office furniture and equipment 1 desk 2 metal cabinets 1 pigeonholed letter rack 2' wide window sill 14" high	Ample size for 2 officers. Planned as a recess in main entrance hall. Plate glass window full length of one wall gives excessive solar heat gain.
WARD 5				
10.	Consultant Paediatrician's Office/Consulting room	200 sq.ft. (1)	Normal office furniture and equipment 1 wash hand basin 1 chest of drawers 1 book case 1 metal cabinet 1 weighing machine 1 long table 1 side table 1 dictating machine 1 cot 1 X-ray viewing box (mounted) 1 carpet 3'6" door	Adequate size. Planned as overnight accommodation for relatives. Situated at ward entrance since out-patients seen here
OUT-PATIENT DEPARTMENT				
11.	Dietician	120 sq.ft. (1)	Normal office furniture and equipment 1 small side table 1 filing cabinet 1 carpet Recessed cupboard and shelving	Originally almoner's office. Now used by a sister who acts as dietician, supervises diet kitchen, and acts as sister at diabetic and obesity clinics. Used intermittently
12.	Sister	120 sq.ft. (1)	Normal office furniture and equipment 1 wash hand basin 1 metal cabinet 1 drug cupboard including D.D.A. 1 wall mirror 1 metal cabinet 1 side table 1 carpet Recessed shelves	Adequate size. Intermittent use.

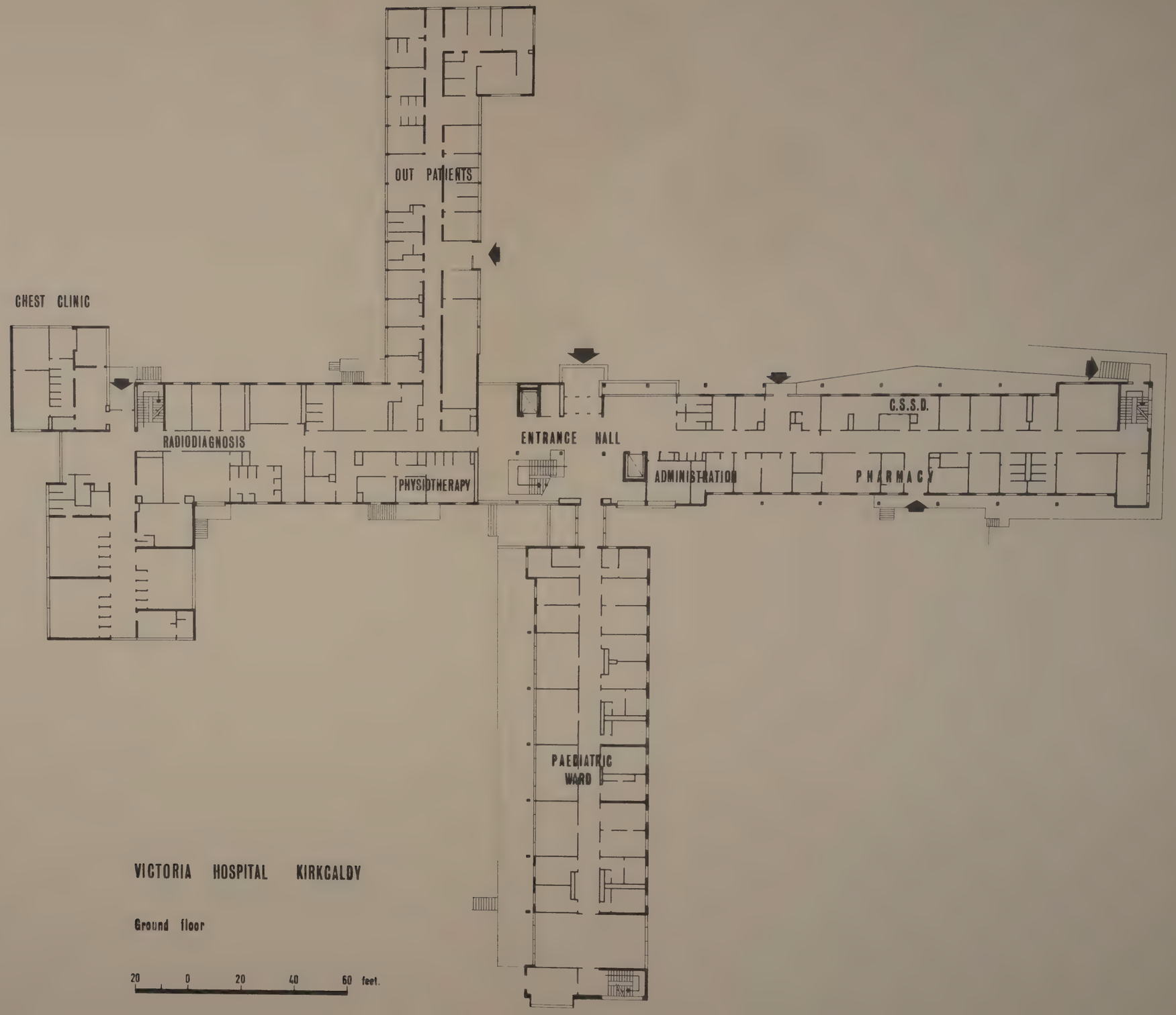
No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
13.	Records Officer	111 sq.ft. (1)	Normal office furniture and equipment 1 table 1 side table 1 filing cabinet 1 safe 1 dictating machine 1 carpet Recessed cabinet and shelves	Adequate size
14.	Dictating Room	125 sq.ft. Irregular shape (-)	2 tables 1 side table 1 filing cabinet 1 chair 1 duplicating machine 1 internal telephone 1 dictating point 1 free-standing radiator Lino tiled floor	No window and ventilation inadequate. Not used for dictating but used as duplicating room
15.	Typists	See plan (3)	5 desks 1 long table 6 chairs 3 dictation receiver points 4 transcribing machines 4 small side tables Central recording machine for dictation Free-standing radiators Lino tiled floor	There are 17 dictating points throughout the hospital
16.	Records Office	500 sq.ft. (6)	3 desks 3 chairs 3 filing cabinets 2 typewriters 2 telephones Addressograph machine A 78 ft. storage unit 7 shelves high with mobile steps	A separate room for addressograph machine is desirable. 100 sq.ft. ample
17.	Reception Office	125 sq.ft. (included in 6 above)	Reception counter filing cabinets for filing cards telephones	See page 3 of O.P.D. Section
18.	Physiotherapy	100 sq.ft. (1)	Normal office furniture and equipment 1 metal cupboard 2 clothes lockers 1 filing cabinet	Planned as a treatment room
19.	Consultant Radiologist	128 sq.ft. plus 57 sq.ft. W.C. compartment wash hand basin with terrazzo floor (1)	Normal office furniture and equipment 1 desk 1 viewing screen 1 carpet Recessed cupboard and book case	Adequate size

No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
CHEST CLINIC				
20.	Almoner	120 sq.ft. (2)	Normal office furniture and equipment 1 couch 1 viewing screen 1 clothes locker Recessed cupboards	Adequate size. Intermittently used by two officers. Also used as supplementary consulting room
21.	Chest Consultant	90 sq.ft. Plus recess of 10 sq.ft. for book case (1)	Normal office furniture and equipment 1 book case in recess 1 viewing screen 1 carpet	Daily part-time use
22.	Chest Clinic Records	187 sq.ft. plus a store of 73 sq.ft. with X-ray records with metal shelving and 1 chair (1)	Normal office furniture and equipment 1 table 8 filing cabinets 1 clothes locker 1 metal cabinet	Unnecessarily large for one clerkess
1st FLOOR				
23.	Consultant Surgeon	169 sq.ft. (1)	Normal office furniture and equipment 1 filing cabinet 1 wall-mounted black-board 1 carpet	Planned as library. Unnecessarily large as office. No dictating point. No wash hand basin.
24.	Consultant Surgeon	180 sq.ft. (1)	As above but with book case and dictating point	Planned as house-officer's room. Unnecessarily large.
25.	Consultant Physician	159 sq.ft. (1)	Normal office furniture and equipment 1 couch 1 filing cabinet 1 viewing screen on small table 1 book case 1 dictating point 1 carpet Wash hand basin with tiled surround and wall mirror	Planned as room for visiting G.Ps. Unnecessarily large as office.
26.	Medical Superintendent	128 sq.ft. Plus entrance lobby and W.C. compartment of 46 sq.ft. (1)	Normal office furniture and equipment 1 book case 1 side table 1 carpet W.C. compartment 4'9" x 5'4"	W.C. compartment ventilates into office. Planned for consultant physician. Suitable size.

No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
DERMATOLOGY WARD				
27.	Consultant Physician	159 sq.ft. (1)	Normal office furniture and equipment 1 book case 1 viewing screen 1 wall mirror 1 small carpet 1 dictating point 1 filing cabinet Wash hand basin with tiled surround	Planned as sister's office for Ward 5. Unnecessarily large
DERMATOLOGY OUT-PATIENT DEPARTMENT				
28.	Sister	123 sq.ft. (1)	Normal office furniture and equipment 1 metal cabinet 2 filing cabinets 1 carpet	Originally records office
29.	Consultant Geriatrician	200 sq.ft. (1)	Normal office furniture and equipment 1 filing cabinet 1 metal cabinet 1 side table 1 carpet	Planned as solarium for Ward 8. Unnecessarily large as office
30.	Consultant Geriatrician's Clerk	200 sq.ft. (1)	Normal office furniture and equipment 5 filing cabinets 1 typewriter table 1 side table with small filing cabinet 1 dictating machine	Planned as solarium for Ward 6. Unnecessarily large as office
31.	Surgical Registrars	115 sq.ft. (2)	Normal office furniture and equipment 1 desk 1 book case 1 dictating point 1 double-leaf door (2'8" and 9") in case required later for beds	Planned as part of landing space and later partitioned to form office No wash hand basin
32.	Gynaecologist (full time) Ophthalmologist (part-time)	As for medical superintendents room, including entrance and toilet annexe (2)	Normal office furniture and equipment 1 book case	Used as changing accommodation by 4 doctors (gynaecologist, 2 E.N.T. and ophthalmologist) Planned as Anaesthetist's office
33.	Department of Anaesthetics	As for consultant surgeon (1) (as 23).	Normal office furniture and equipment 1 desk 1 book case 1 carpet 1 wall notice board	Used also by assistant. Planned as consultants' room Unnecessarily large (Detailed function not ascertained) No dictating point and wash hand basin

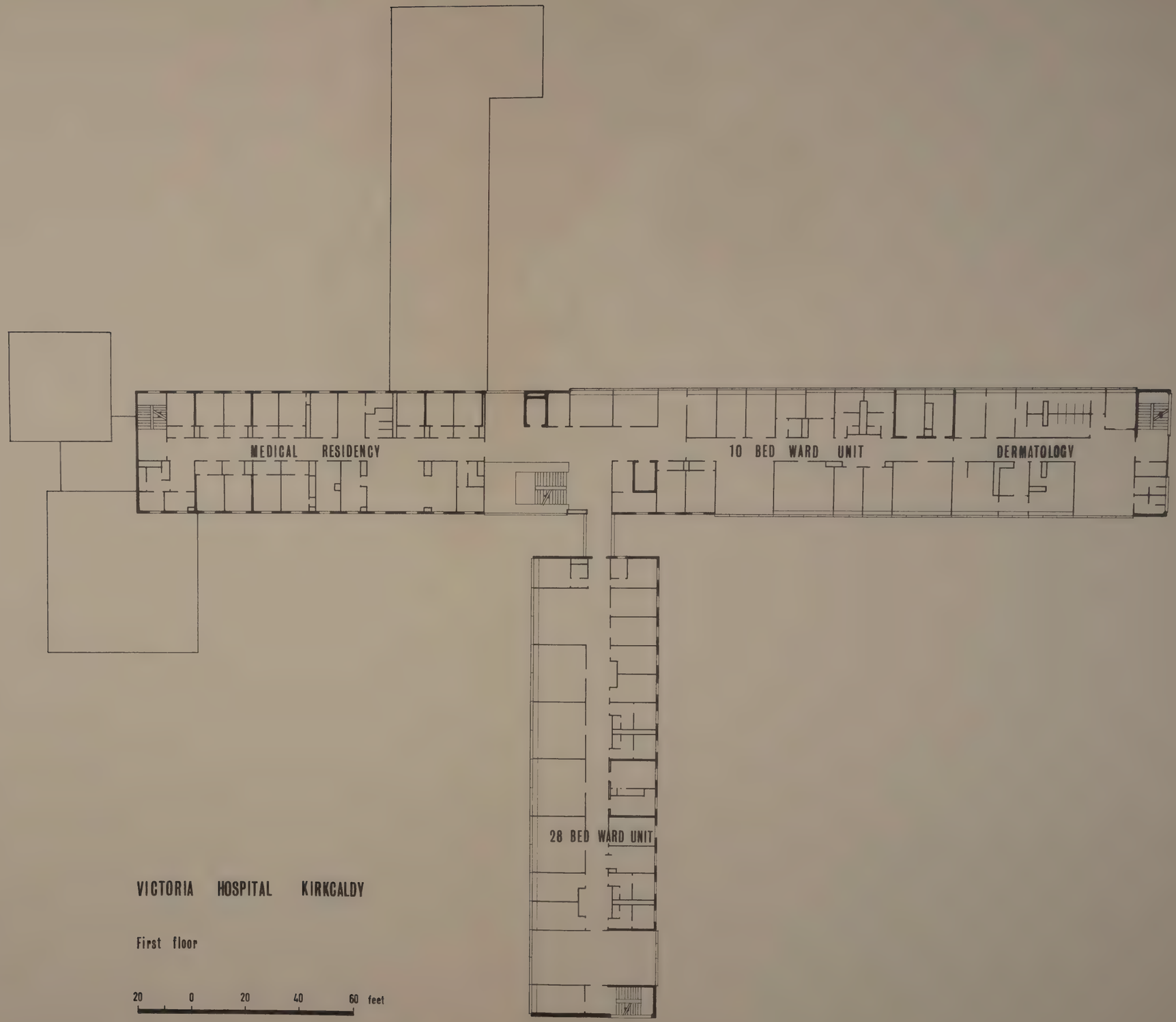
No.	Office	Floor Area (Normal no. of occupants	Furniture and Equipment	Comments
34.	Consultant Anaesthetist	As for consultant surgeon (1)	Normal office furniture and equipment 1 filing cabinet 1 book case 1 dictating point 1 carpet No wash hand basin	Planned as houseman's room. Unnecessarily large. Daily part-time use.
KITCHEN AND DINING ROOM				
35.	Dietician	79 sq.ft. (1)	Normal office furniture and equipment 1 fitted cupboard 1 wooden cupboard 1 filing cabinet	Too small
36.	Catering Officer	46 sq.ft. (1)	Normal office furniture and equipment 1 fitted cupboard and drawers 1 wooden cupboard 1 wall-mounted adjustable lamp	Too small
CENTRAL NURSE TRAINING SCHOOL GROUND FLOOR (Converted Accommodation)				
37.	Director of Nurse Education	155 sq.ft. (1)	Normal office furniture and equipment 1 small table 1 filing cabinet 2 record cabinets 1 wall mounted notice board 1 carpet Built-in cupboard	Adequate size
FIRST FLOOR				
38.	Tutors	140 sq.ft. (2)	Normal office furniture and equipment 1 desk 1 wall-mounted notice board 1 carpet Built-in glass fronted cupboard	Adequate size
39.	Tutor	125 sq.ft. (1)	Normal office furniture and equipment 1 wall-mounted notice board 1 carpet Built-in glass fronted cupboard	Adequate size
40.	Tutor	92 sq.ft. (1)	Normal office furniture and equipment 1 filing cabinet 1 wall-mounted notice board 1 carpet	Adequate size

No.	Office	Floor Area (Normal no. of occupants)	Furniture and Equipment	Comments
SECOND FLOOR				
41.	Secretary	182 sq.ft. (1)	Normal office furniture and equipment 1 table 1 typewriter 2 small filing cabinets 1 filing cabinet	Not excessive since double coomb ceiling restricts space.



VICTORIA HOSPITAL KIRKCALDY

Ground floor



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Second floor

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